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S. Hrg. 99-439

PRICE-ANDERSON ACT AMENDMENTS ACT OF 1985

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ORIGINAL

HEARING

BEFORE THE

SUBCOMMITTEE ON
ENERGY RESEARCH AND DEVELOPMENT

OF THE

COMMITTEE ON
ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

NINETY-NINTH CONGRESS

FIRST SESSION

ON

S. 1225

A BILL TO AMEND THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, TO ESTABLISH A COMPREHENSIVE, EQUITABLE, RELIABLE, AND EFFICIENT MECHANISM FOR FULL COMPENSATION OF THE PUBLIC IN THE EVENT OF AN ACCIDENT RESULTING FROM ACTIVITIES UNDERTAKEN UNDER CONTRACT WITH THE DEPARTMENT OF ENERGY OR ACTIVITIES UNDERTAKEN BY NUCLEAR REGULATORY COMMISSION LICENSEES INVOLVING NUCLEAR MATERIALS

JUNE 25, 1985

Printed for the use of the
Committee on Energy and Natural Resources

S. Hrg. 99-439

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JUNE 25, 1985

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Committee on Energy and Natural Resources

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I

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PRICE-ANDERSON ACT AMENDMENTS ACT OF 1985

TUESDAY, JUNE 25, 1985

U.S. SENATE,
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT,
COMMITTEE ON ENERGY AND NATURAL RESOURCES,
Washington, DC.

The subcommittee met, pursuant to notice, at 9 a.m., in room SD-366, Dirksen Senate Office Building, Hon. Pete V. Domenici presiding.

Present: Senators Domenici, McClure, Warner, Murkowski, Hecht, Evans, Ford, Metzenbaum, and Bingaman.

Also present: Marilyn Meigs, professional staff member; and Benjamin S. Cooper, professional staff member for the minority.

OPENING STATEMENT OF HON. PETE V. DOMENICI, A U.S. SENATOR FROM THE STATE OF NEW MEXICO

Senator DOMENICI. The hearing will come to order. We may not have an extremely orderly set of hearings here in terms of continuity, because I have to leave at 9:30. The chairman of the full committee indicates he will be here shortly and hopefully can preside for some time. There's just no way to get out of the dilemma we're in, so we'll do the very best we can and, to the extent that we cannot complete the hearing, we will just have to set it again. I'm sorry about that, but I can't do anything to the contrary today.

This morning's hearing is to receive testimony on S. 1225, a bill introduced by Senators Simpson and the chairman of this committee, Senator McClure. It extends and modifies the Price-Anderson Act. While most of the public identifies that act with commercial nuclear powerplants, it also provides indemnity for DOE contractors engaged in nuclear research and defense activities. Moreover, the act covers some activities associated with the disposal of defense and civilian nuclear waste.

As we will hear from the witnesses, there is a concensus that coverage relating to nuclear waste disposal needs some clarification and some expansion. I hope that today's hearings will identify those further issues, but I must say that Senator McClure has taken an excellent first step with the introduction of the bill, and I commend him for it.

Our first witnesses are James Vaughan and Ben Rusche of the Department of Energy. We have your prepared testimony. You may proceed. I would encourage you to summarize, if you can. Both of your statements will be made a part of the record.

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Do you want to proceed with Mr. Vaughan, first, or Mr. Rusche?

Mr. VAUGHAN. I am going to go first.

Senator DOMENICI. All right, let's proceed.

[The text of S. 1225 follows:]

II

99TH CONGRESS
1ST SESSION

S. 1225

To amend the Atomic Energy Act of 1954, as amended, to establish a comprehensive, equitable, reliable, and efficient mechanism for full compensation of the public in the event of an accident resulting from activities undertaken under contract with the Department of Energy or activities undertaken by Nuclear Regulatory Commission licensees involving nuclear materials.

IN THE SENATE OF THE UNITED STATES

MAY 24 (legislative day, APRIL 15), 1985

Mr. DOLE (for Mr. SIMPSON) (for himself and Mr. MCCLURE) introduced the following bill; which was read twice and jointly referred to the Committee on Environment and Public Works and the Committee on Energy and Natural Resources, with the proviso that if either committee reports the bill, the other committee shall be obligated to report the bill in 120 calendar days or be discharged from further consideration thereof

---

A BILL

To amend the Atomic Energy Act of 1954, as amended, to establish a comprehensive, equitable, reliable, and efficient mechanism for full compensation of the public in the event of an accident resulting from activities undertaken under contract with the Department of Energy or activities undertaken by Nuclear Regulatory Commission licensees involving nuclear materials.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

★(Star Print)

SHORT TITLE

SECTION 1. This Act may be cited as the "Price-Anderson Act Amendments Act of 1985".

FINDINGS AND PURPOSES

SEC. 2. (a) The Congress finds and declares that—

(1) an equitable, efficient, reliable, and comprehensive system, established in advance of any accident involving nuclear materials subject to the Atomic Energy Act of 1954, as amended, that provides a mechanism for full compensation of the public in the event of such an accident is in the public interest;

(2) the basic framework established under section 170 of the Atomic Energy Act of 1954, as amended, and the essential elements of that approach, have achieved those fundamental objectives and, accordingly, should be retained; and

(3) based upon the experience gained in implementing the present system of providing compensation for accidents involving nuclear materials, and in light of developments that have taken place since the Congress last extended and amended such system, it is appropriate and in the public interest for the Congress to consider such experience and developments and to make such changes as will advance the fundamental objectives set forth in clause (1).

(b) The purposes of this Act are to—

(1) establish an equitable, efficient, reliable, and comprehensive system, in advance of any accident involving nuclear materials, which provides a mechanism for full compensation of the public in the event of such an accident for both present and future nuclear material activities; and

(2) incorporate in such system the experience gained and the developments that have taken place since the Congress last extended and amended the system.

FINANCIAL PROTECTION

SEC. 3. Section 170 b. of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"b. (1) The amount of financial protection required shall be the amount of liability insurance available from private sources, except that the Commission may establish a lesser amount on the basis of criteria set forth in writing, which it may revise from time to time, taking into consideration such factors as—

"(A) the cost and terms of private insurance,

"(B) the type, size, and location of the licensed activity and other factors pertaining to the hazard, and

"(C) the nature and purpose of the licensed activity.

For facilities designed for producing substantial amounts of electricity and having a rated capacity of one hundred thousand electrical kilowatts or more, the amount of financial protection required shall be the maximum amount available at reasonable cost and on reasonable terms from private sources. Such financial protection may include private insurance, private contractual indemnities, self insurance, other proof of financial responsibility, or a combination of such measures and shall be subject to such terms and conditions as the Commission may, by rule, regulation, or order, prescribe.

"(2)(A) In prescribing such terms and conditions for licensees required to have and maintain financial protection equal to the maximum amount of liability insurance available from private sources, the Commission shall, by rule initially prescribe not later than twelve months from the date of enactment of the Price-Anderson Act Amendments Act of 1985, include, in determining such maximum amount, private liability insurance available under an industry retrospective rating plan providing for premium charges deferred in whole or major part until public liability from a nuclear incident exceeds or appears likely to exceed the level of the primary financial protection required of the licensee involved in the nuclear incident: *Provided,* That such insurance is available to, and required of, all of the licensees of such facilities without regard to the manner in which they obtain other types or amounts of such financial protection. The standard deferred premium which may be charged following any nuclear incident under such a plan shall be not less than $10,000,000 nor more than $15,000,000 for each facility required to maintain the maximum amount of financial protection.

"(B) The amount which may be charged a licensee under the industry retrospective rating plan required pursuant to subparagraph (A) following any nuclear incident shall not exceed the licensee's pro rata share of the aggregate public liability claims and costs arising out of the nuclear incident. Payment of any State premium taxes which may be applicable to any deferred premium provided for in this Act shall be the responsibility of the licensee and shall not be included in the retrospective premium established by the Commission. The Commission is authorized to establish a maximum amount which the aggregate deferred premium charged for each facility within one calendar year may not exceed. The Commission may establish amounts less than the standard premium for individual facilities taking into account such factors as the facility's size, location, and other factors pertaining to the hazards.

"(C) The Commission shall establish such requirements as are necessary to assure availability of funds to meet any assessment of deferred premiums within a reasonable time when due, and may provide reinsurance or shall otherwise guarantee the payment of such premiums in the event it appears that the amount of such premiums will not be available on a timely basis through the resources of private industry and insurance. Any agreement by the Commission with a licensee or indemnitor to guarantee the payment of deferred premiums may contain such terms as the Commission deems appropriate to carry out the purposes of this section and to assure reimbursement to the Commission for its payments made due to the failure of such licensee or indemnitor to meet any of its obligations arising under or in connection with financial protection required under this subsection including without limitation terms creating liens upon the licensed facility and the revenues derived therefrom or any other property or revenues of such licensee to secure such reimbursement and consent to the automatic revocation of any license.

"(3)(A) In prescribing such terms and conditions for licensees required to have and maintain financial protection equal to the maximum amount of liability insurance available from private sources, the Commission shall, by rule initially prescribed not later than twelve months from the date of enactment of the Price-Anderson Act Amendments Act of 1985, also include, in determining such maximum amount, the sum of the funds generated by assessing a fee of up to one mil per kilowatt hour on electricity generated and sold by each licensed civilian nuclear power reactor. The Commission is authorized to collect such a fee from all civilian nuclear power reactor licensees, on all electricity generated and sold by such licensees following a nuclear incident, upon determining that public liability from such incident exceeds or appears likely to exceed the sum of the private insurance and the industry retrospective rating plan required pursuant to this section. The order of the Commission assessing such fee shall establish a commencement date for assessment of the fee. Collection of the fee shall terminate when the total amount of public liability associated with such nuclear incident, as defined in section 11 w. of this Act, has been compensated: *Provided, however,* That the amount collected shall not exceed $500,000,000 per incident.

"(B) The Commission is authorized to establish a maximum amount which the aggregate fees assessed for each facility within one calendar year may not exceed.".

INDEMNIFICATION AGREEMENTS FOR ACTIVITIES UNDERTAKEN UNDER CONTRACT WITH THE DEPARTMENT OF ENERGY

SEC. 4. Section 170 d. of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"d. (1)(A) In addition to any other authority the Secretary of the Department of Energy (hereinafter in this section referred to as the Secretary) may have, the Secretary is authorized until August 1, 2012, to enter into agreements of indemnification with its contractors for the construction or operation of production or utilization facilities or other activities under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident.

"(B)(i) The authority conferred upon the Secretary pursuant to subparagraph (A) to enter into agreements of indemnification with contractors shall include contracts entered into by the Secretary for the purpose of carrying out such activities as the Secretary is authorized to undertake, pursuant to this Act or any other law, involving the storage or disposal of spent nuclear fuel, high-level radioactive waste, or transuranic waste, including the transportation of such materials to a storage or disposal site or facility, and the construction and operation of any such site or facility. For all such activities, the authority conferred upon the Secretary pursuant to subsection 170 d. (1)(A) shall be the exclusive means of indemnification under this section.

"(ii) For the purpose of compensating public liability claims, as defined in section 11 w. of this Act, arising out of activities involving the storage or disposal of spent nuclear fuel, high-level radioactive waste, or transuranic waste produced as a result of the generation of electricity in a civilian nuclear power reactor, including the transportation of such materials to a storage or disposal site or facility, and the construction and operation of any such site or facility, the Secretary shall make available such funds as may be necessary, in an amount not to exceed the maximum amount of financial protection required of licensees pursuant to subsection 170 a., from the nuclear waste fund established pursuant to section 302 of the Nuclear Waste Policy Act of 1982 (42 U.S.C. 10222).

"(iii) Public liability claims arising out of activities involving the storage or disposal of all other spent nuclear fuel, high-level radioactive waste, or transuranic waste not specified in clause (ii), including the transportation of such materials to a storage or disposal site or facility, and the construction and operation of any such site or facility, shall be compensated in accordance with the provisions of this Act, and from the same source of funds applicable to all other contractors indemnified pursuant to this subsection.

"(iv)(I) In the event of a nuclear incident that arises out of or results from or occurs in the course of activities undertaken by the Secretary in connection with the storage or disposal of spent nuclear fuel, high-level radioactive waste, or transuranic waste, including the transportation of such materials to a storage or disposal site or facility, and the construction and operation of any such site or facility, the Secretary shall determine the extent to which such incident involves materials produced as a result of the generation of electricity in a civilian nuclear power reactor, or materials resulting from other activities, or both, and based upon such determination, render a decision as to the appropriate source of funds, in accordance with clauses (ii) and (iii), to be used in compensating public liability claims.

"(II) The funds to be used to compensate public liability claims pursuant to this subparagraph shall be provided in a manner and in such amounts as are appropriate to ensure that the funds necessary to compensate such claims are shared on a pro rata basis, in accordance with the determination rendered pursuant to subclause (I). The decision on the sources of such funds shall be final and conclusive. Within ninety days of the date of enactment of the Price-Anderson Act Amendments Act of 1985, the Secretary shall promulgate standards and regulations for making the determinations required under this subparagraph.

"(2) In agreements of indemnification entered into pursuant to subsection 170 d. (1), the Secretary may require its contractor to provide and maintain financial protection of such a type and in such amounts as the Secretary shall determine to be appropriate to cover public liability arising out of or in connection with the contractual activity, and shall indemnify the persons indemnified against such claims above the amount of the financial protection required, in an amount equal to the maximum amount of financial protection required of licensees pursuant to subsection 170 a., excluding costs of investigating and settling claims and defending suits for damage in the aggregate for all persons indemnified in connection with such contract and for each nuclear incident: *Provided*, That this amount of indemnity shall be reduced by the amount of the financial protection that the Secretary requires of the contractor.

"(3) Notwithstanding paragraph (2) of this subsection, if the maximum amount of financial protection required of licensees pursuant to subsection 170 a. is increased by the Commission, the amount of indemnity, together with any financial protection required of the contractor, shall at all times remain equal to the maximum amount of financial protection required of licensees pursuant to subsection 170 a. The amount of indemnity provided contractors pursuant to this subsection shall not, at any time, be reduced in the event that the maximum amount of financial protection required of licensees is reduced.

"(4) In the case of nuclear incidents occurring outside the United States, the amount of the indemnity provided by the Secretary pursuant to this subsection shall not exceed $100,000,000.

"(5) The provisions of this subsection may be applicable to lump sum as well as cost type contracts and to contracts and projects financed in whole or in part by the Secretary.

"(6) A contractor with whom an agreement of indemnification has been executed and who is engaged in activities connected with the underground detonation of a nuclear explosive device shall be liable, to the extent so indemnified under this section, for injuries or damage sustained as a result of such detonation in the same manner and to the same extent as would a private person acting as principal, and no immunity or defense founded in the Federal, State, or municipal character of the contractor or of the work to be performed under the contract shall be effective to bar such liability.".

AGGREGATE LIABILITY FOR A SINGLE NUCLEAR INCIDENT

SEC. 5. Section 170 e. of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"e. (1)(A) With respect to nuclear incidents involving—

"(i) licensees required to have and maintain financial protection equal to the maximum amount of liability insurance available from private sources, and

"(ii) contractors with whom the Secretary has entered into an agreement of indemnification, pursuant to subsection 170 d.,

the aggregate liability for a single nuclear incident of persons indemnified, including the reasonable costs of investigating and settling claims and defending suits for damage, shall not exceed the maximum amount of financial protection required of licensees pursuant to subsection 170 a.: *Provided, however,* That the aggregate liability for nuclear incidents involving contractors with whom the Secretary has entered into an agreement of indemnification, pursuant to subsection 170 d., shall not, at any time, be reduced in the event that the amount of financial protection required of licensees required to have and maintain financial protection equal to the maximum amount of liability insurance available from private sources is reduced.

"(B) With respect to nuclear incidents involving licensees other than those specified in subsection 170 e. (1)(A)(i), the aggregate liability for a single nuclear incident of persons indemnified, including the reasonable costs of investigating and settling claims and defending suits for damage, shall not exceed (i) the sum of $500,000,000 together with the amount of financial protection required of the licensee, or (ii) if the amount of financial protection required of the licensee exceeds $60,000,000, such aggregate liability shall not exceed the sum of $560,000,000 or the amount of financial protection required of the licensee, whichever amount is greater.

"(C) In the event of a nuclear incident involving damages in excess of the amount of aggregate liability, the Congress will thoroughly review the particular incident, in accordance with the procedures set forth in subsection 170 i., and will, in accordance with such procedures, take whatever action is necessary, including approval of appropriate compensation plans, to compensate the public in full for all public liability claims resulting from a disaster of such magnitude.

"(2) With respect to any nuclear incident occurring outside of the United States to which an agreement of indemnification entered into under the provisions of subsection 170 d. is applicable, such aggregate liability shall not exceed the amount of $100,000,000 together with the amount of financial protection required of the contractor.".

CONGRESSIONAL REVIEW OF COMPENSATION PLANS

SEC. 6. Section 170 i. of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"i. (1) After any nuclear incident which will probably require payments by the United States under this section, the Secretary or the Commission, as appropriate, shall make a survey of the causes and extent of damage, and shall submit such report forthwith to the Congress, to the Congressmen of the affected districts, to the Senators of the affected States, and, except for information which would cause serious damage to the national defense of the United States, to the public, to the parties involved, and to the courts. The Commission and the Secretary shall report annually to the Congress on the operations under this section.

"(2) Upon a determination by a court, pursuant to subsection 170 o., that public liability from a single nuclear incident may exceed the aggregate liability under subsection 170 e., the President of the United States shall, within ninety days after such determination, submit to the Congress—

"(A) a report setting forth the causes and extent of damage and the estimated requirements for full, equitable, and efficient compensation and relief of all claimants;

"(B) one or more compensation plans, containing a recommendation or recommendations as to the relief to be provided; and

"(C) any additional legislative authorities necessary to implement such compensation plan or plans.

"(3) Any compensation plan transmitted to the Congress pursuant to paragraph (2) shall bear an identification number and shall be transmitted to both Houses of Congress on the same day and to each House while it is in session.

"(4) No such compensation plan may be considered approved for purposes of subsection 170 e. (1) unless between the date of transmittal and the end of the first period of sixty calendar days of continuous session of Congress after the date on which such action is transmitted to such House, each House of Congress passes a resolution described in paragraph 6 of this subsection.

"(5) For the purpose of paragraph 4 of this subsection—

"(A) continuity of session is broken only by an adjournment of Congress sine die; and

"(B) the days on which either House is not in session because of an adjournment of more than three days to a day certain are excluded in the computation of the sixty-day calendar period.

"(6)(A) This paragraph is enacted by Congress—

"(i) As an exercise of the rulemaking power of the Senate and the House of Representatives, respectively, and as such it is deemed a part of the rules of each House, respectively, but applicable only with respect to the procedure to be followed in that House in the case of resolutions described by clause (B) and it supersedes other rules only to the extent that it is inconsistent therewith; and

"(ii) with full recognition of the constitutional right of either House to change the rules (so far as relating to the procedure of that House) at any time, in the same manner and to the same extent as in the case of any other rule of the House.

"(B) For purposes of this paragraph, the term 'resolution' means only a resolution of either House of Congress the matter after the resolving clause of which is as follows: "That the   approves the compensation plan numbered   submitted to the Congress on   , 19   .", the first blank space therein being filled with the name of the resolving House and the other blank spaces being appropriately filled; but does not include a resolution which specifies more than one compensation plan.

"(C) A resolution once introduced with respect to a compensation plan shall immediately be referred to a committee (and all resolutions with respect to the same compensation plan shall be referred to the same committee) by the President of the Senate or the Speaker of the House of Representatives, as the case may be.

"(D)(i) If the committee to which a resolution with respect to a compensation plan has been referred has not reported it at the end of twenty calendar days after its referral, it shall be in order to move either to discharge the committee from further consideration of such resolution or to discharge the committee from further consideration with respect to such compensation plan which has been referred to the committee.

"(ii) A motion to discharge may be made only by an individual favoring the resolution, shall be highly privileged (except that it may not be made after the committee has reported a resolution with respect to the same compensation plan), and debate thereon shall be limited to more than one hour, to be divided equally between those favoring and those opposing the resolution. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

"(iii) If the motion to discharge is agreed to or disagreed to, the motion may not be renewed, nor may another motion to discharge the committee be made with respect to any other resolution with respect to the same compensation plan.

"(E)(i) When the committee has reported, or has been discharged from further consideration of, a resolution, it shall be at any time thereafter in order (even though a previous motion to the same effect has been disagreed to) to move to proceed to the consideration of the resolution. The motion shall be highly privileged and shall not be debatable. An amendment to the motion shall not be in order, and it shall not be in order to move to reconsider the vote by which the motion was agreed to or disagreed to.

"(ii) Debate on the resolution referred to in clause (i) of this subparagraph shall be limited to not more than ten hours, which shall be divided equally between those favoring and those opposing such resolution. A motion further to limit debate shall not be debatable. An amendment to, or motion to recommit, the resolution shall not be in order, and it shall not be in order to move to reconsider the vote by which such resolution was agreed to or disagreed to.

"(F)(i) Motions to postpone, made with respect to the discharge from committee, or the consideration of a resolution or motions to proceed to the consideration of other business, shall be decided without debate.

"(ii) Appeals from the decision of the Chair relating to the application of the rules of the Senate or the House of Representatives, as the case may be, to the procedures relating to a resolution shall be decided without debate.".

WAIVER OF DEFENSES

SEC. 7. (a) Section 170 n. (1) of the Atomic Energy Act of 1954, as amended, is amended—

(1) by adding "or" at the end of subparagraph (c);

(2) by adding the following new paragraphs (d), (e), and (f):

"(d) arises out of or results from or occurs in the course of the construction, possession, or operation of any facility licensed under section 53, 63, or 81 of this Act, for which the Commission has imposed as a condition of the license a requirement that the licensee have and maintain financial protection pursuant to subsection 170 a., or

"(e) arises out of or results from or occurs in the course of transportation of source material, byproduct material, or special nuclear material to or from any facility licensed under section 53, 63, or 81 of this Act, for which the Commission has imposed as a condition of the license a requirement that the licensee have and maintain financial protection pursuant to subsection 170 a., or

"(f) arises out of or results from or occurs in the course of activities undertaken by the Secretary, including activities undertaken by contract, in connection with the storage or disposal of high-level radioactive waste, spent nuclear fuel, or transuranic waste, including the transportation of such materials to a storage or disposal site or facility, and the construction and operation of any such site or facility,".

(b) Subsection n. of section 170 of the Atomic Energy Act of 1954, as amended, is amended—

(1) in paragraph (1) by—

(A) inserting after "the Commission" the following: "or the Secretary, as appropriate,"; and

(B) striking out "a Commission" in clause (c) and insert in lieu thereof "a Department of Energy"; and

(2) in paragraph (2), by inserting after "the Commission" the following: "or the Secretary, as appropriate,".

INDEMNIFICATION FROM PUBLIC LIABILITY IN EXCESS OF LEVEL OF FINANCIAL PROTECTION

SEC. 8. Section 170 c. of the Atomic Energy Act of 1954, as amended, is amended to read as follows:

"c. (1) The Commission shall, with respect to licenses issued between August 30, 1954, and August 1, 2012, for which it requires financial protection of less than $560,000,000, agree to indemnify and hold harmless the licensee and other persons indemnified, as their interest may appear, from public liability arising from nuclear incidents which is in excess of the level of financial protection required of the licensee. The aggregate indemnity for all persons indemnified in connection with each nuclear incident shall not exceed $500,000,000, excluding costs of investigating and settling claims and defending suits for damage: *Provided, however,* That this amount of indemnity shall be reduced by the amount that the financial protection required shall exceed $60,000,000.

"(2) Such a contract of indemnification shall cover public liability arising out of or in connection with the licensed activity.

"(3) With respect to any production or utilization facility for which a construction permit is issued between August 30, 1954, and August 1, 2012, the requirements of this subsection shall apply to any license issued for such facility subsequent to August 1, 2012.".

DEFINITIONS

SEC. 9. (a) Subsection s. of section 11 of the Atomic Energy Act of 1954, as amended, is amended by adding at the end thereof the following: "For purposes of those activities that the Secretary of Energy is authorized or directed to undertake, pursuant to this Act or any other law, that involve the risk of public liability for a substantial nuclear incident as a result of the storage or disposal of spent nuclear fuel, high-level radioactive waste, or transuranic waste, including the transportation of such materials to a storage or disposal site or facility, and the construction and operation of any such site or facility, the Secretary shall, to the extent that such activities are not undertaken by contract, be considered as if the Secretary were a contractor with whom an indemnity agreement has been entered into pursuant to subsection 170 d. of this Act.".

(b) Subsection t. of section 11 of the Atomic Energy Act of 1954, as amended, is amended in clause (1) by inserting after "and any other person" the following: ", as defined in subsection (s),".

DATE OF EXEMPTION FROM FINANCIAL PROTECTION REQUIREMENT

SEC. 10. Section 170 k. of the Atomic Energy Act of 1954, as amended, is amended by striking out "August 1, 1987" wherever it appears and inserting in lieu thereof "August 1, 2012".

REPORT TO JOINT COMMITTEE BY COMMISSION

SEC. 11. Section 170 o. of the Atomic Energy Act of 1954, as amended, is amended—

(1) in paragraph (3) by inserting after "The Commission", both places such phrase appears the following: "or the Secretary, as appropriate,"; and

(2) by striking out paragraph (4).

DATE OF REPORT TO CONGRESS BY NUCLEAR REGULATORY COMMISSION AND DEPARTMENT OF ENERGY

SEC. 12. Secretary 170 p. of the Atomic Energy Act of 1954, as amended, is amended by striking out "shall submit to the Congress by August 1, 1983, a detailed report", and inserting in lieu thereof "and the Secretary shall submit to the Congress by August 1, 2008, detailed reports".

CONFORMING AMENDMENTS

SEC. 13. Subsections g., h., j., and m. of section 170 of the Atomic Energy Act of 1954, as amended, are amended by inserting after "The Commission" or "the commission" wherever they appear the following: "or the Secretary, as appropriate,".

SEC. 14. Subsection f. of section 170 of the Atomic Energy Act of 1954, as amended, is amended by striking "Commission" the first two times it appears and inserting in lieu thereof "Commission or the Secretary, as appropriate,".

STATEMENT OF HON. JAMES W. VAUGHAN, JR., ACTING ASSISTANT SECRETARY, OFFICE OF NUCLEAR ENERGY, DEPARTMENT OF ENERGY

Mr. VAUGHAN. In addition to Mr. Rusche, Mr. Chairman, we have with us Mrs. Susan Kuznick from our Office of General Counsel who will assist us in any responses. She does not have a separate statement.

Senator DOMENICI. All right, fine. You're welcome, ma'am.

Mr. VAUGHAN. It is a pleasure to be here this morning to discuss the Department's position on extending the Price-Anderson Act, because we consider it a matter of vital national importance.

In 1983, both the Department and the Nuclear Regulatory Commission submitted reports to the Congress recommending continuation of Price-Anderson as it applies to our respective activities. The five recommendations made by the Department in 1983 were:

First, that the Price-Anderson indemnity system should be continued to ensure furtherance of the Department's statutory mission and financial protection available to the public.

Second, that the Price-Anderson limit of liability for DOE contractors should equal that provided for NRC licensees.

Third, that Price-Anderson should be amended to extend the extraordinary nuclear occurrence feature to commercial and defense waste facilities.

Fourth, that Price-Anderson should not be amended to include coverage for acts of theft or sabotage when such an event could not be traced to either the NRC licensee or to the DOE contractor activity, and therefore satisfy the criteria for coverage.

And last, that Price-Anderson should not be amended to include coverage for the cost of precautionary evacuations when no nuclear incident in fact occurs.

These recommendations still apply today with one clarification. In the Department's August 1983 report on extending Price-Anderson, we recommended that the liability limit for DOE contractors equal that proposed for NRC licensees. At that time, we anticipated that the NRC would recommend an absolute liability cap. However, when the NRC issued its report in December 1983, the NRC recommended that the absolute limitation be changed to an annual limitation, a position with which the Department does not agree.

First, let me briefly summarize how Price-Anderson affects DOE operations. Although the Department's contractors have compiled an excellent safety and health record over the last three decades, the nature of a nuclear accident is such that a system of financial protection that provides the Department with authority to indemnify its contractors and subcontractors involved in nuclear activities is necessary for the Department to carry out its statutory mission. Without some form of indemnification, contractors at all levels may well refuse to continue doing business with the Department.

Second, let's look for a moment at commercial nuclear power safety. To date, only 112 incidents have been reported to the Commercial Nuclear Insurance Pools, which began operating in 1957. During this period, about $43 million has been paid for third-party claims. Payments due to the——

Senator DOMENICI. Would you repeat that again? Would you repeat that again, Mr. Secretary, and move that mike a little closer to yourself, if you would.

Mr. VAUGHAN. Excuse me.

Senator DOMENICI. You were describing?

Mr. VAUGHAN. Yes. We were looking at the question of commercial nuclear power safety, and I noted that to date only 112 incidents have been reported to the Commercial Nuclear Insurance Pools, which began operating in 1957.

During that period, about $43 million has been paid for third-party claims. Payments due to the accident at Three Mile Island represent about $41 million, or more than 95 percent of that total. It is interesting to note that payment by the Commercial Nuclear Insurance Pools for onsite property damage, as contrasted to personal claims during that same period, total about $488 million. Again, primarily due to the TMI accident.

Notwithstanding the nuclear industry's proven safety record, however, the lack of familiarity by the public with nuclear power and the attention that is given to any abnormal nuclear occurrence, however minor it may be, continues to raise fears that have no factual basis.

For example, the Presidential Commission that investigated the Three Mile Island incident concluded that the maximum radiation dose was 70 millirems to any individual among the offsite population, and that's contrasted to a natural background level of approximately 80 millirems per year.

It's our conclusion that the financial protection made available by the present Price-Anderson system balances the limited liability granted the nuclear power operator and others that may be liable against the tradeoff of more certain, rapid, and widely available compensation for the public. Any changes and reforms that would alter this balance should be considered with great care.

I would offer that there are two guiding principles that should lie behind any proposal that proposed to modify the Price-Anderson system.

First, that a Federal system of financial protection should continue to exist.

And second, that any such system of financial protection must balance the needs of the public and of the industry in some equitable manner.

The Price-Anderson system has worked well during its 28 years in existence. It does balance the public's desire for financial protection against extraordinary nuclear occurrences, and the industry's concern for limited liability. There are some things that both DOE contractors and NRC licensees give up to achieve this balance.

In the case of an extraordinary nuclear occurrence, they waive their legal defenses that would normally be available under state tort law. They accept liability for any extraordinary nuclear occurrence, and they are able to provide funds to respond quickly on behalf of all parties. The system we have is a good one. Let's update it, but let's not radically change it.

The Department does recognize that some proposals have been made that would alter the Price-Anderson Act significantly. While not specifically on your agenda, we note that one such proposal identified as S. 445 would remove the limitation on liability and would also eliminate the requirement that an extraordinary nuclear occurrence must be declared to trigger the requirement that defendants must waive defenses which are ordinarily available under tort law.

Adoption of this proposal would mean that the waiver of defenses provision would apply for paying claims out of any nuclear incident. This would leave members of the nuclear industry unable to use defenses generally available under tort law, and would result in punitive treatment of the nuclear industry.

The specific bill which has been introduced by Senators Dole, McClure, and Simpson, S. 1225, would affect the Department of Energy's operations in four ways.

First, it would increase the financial protection available to the public as a result of DOE contractor activity to an amount equal to the protection available for NRC licensees.

Second, it would explicitly apply Price-Anderson to DOE activities involving the transportation, storage, and disposal of nuclear waste and spent fuel. Mr. Rusche will expand on this subject in a few minutes.

Third, it would establish a requirement for a Presidential report, as well as a mechanism for congressional review, of DOE contractor accidents should liability claims exceed the amount of funds available under Price-Anderson.

And fourth, it would extend the Department's authority to enter into indemnification agreements with DOE contractors for 25 years.

In comparing these two proposals, I would simply note that a system of financial protection that would include provisions similar to S. 445 would no longer balance the public's need for rapid, certain, and widely available compensation and industry's need for protection that is otherwise available under existing tort laws. It is unlikely that such a system of financial protection which provides the public with prompt and certain payment could exist if this balance between the public's need and industry's need is no longer equitable.

By contrast, S. 1225 does appear to reflect this important balance. Accordingly, the Department does not support changes that would implement unlimited liability or change the definition of an extraordinary nuclear occurrence, or otherwise expand Price-Anderson coverage for minor nuclear incidents.

In the existing act, Congress wisely reserved the opportunity for further review after prompt, assured settlements within a liability cap is exhausted. We suggest that Congress continue that wisdom.

Let me conclude with some general recommendations that we in the Department believe should be present in any legislative proposal that modifies Price-Anderson.

First, with respect to DOE contractors and its operations, a Federal system of financial protection covering persons who may be injured as a result of a nuclear incident, as well as persons that may be liable, should continue to exist. An absolute limitation on liability should be retained. Such a system is necessary if the Department is to carry out its statutory mission.

This system of financial protection should explicitly apply to all nuclear waste activities covered by the Nuclear Waste Policy Act of 1982, and the current definitions of nuclear incident and extraordinary nuclear occurrence should be retained.

Second, with respect to legislative proposals that affect NRC licensees and commercial operations, we would like to make two points. Although the nuclear industry has an outstanding safety record, the potential high consequence of a nuclear accident, despite its low probability, argues for some form of financial protection covering the person who may be injured and persons who may be liable.

This protection, with appropriate limits on liability, should be continued. There continues to be a need for balance between the special protection benefits provided the public and the defense protection that industry has given up that is generally available under tort law.

This concludes my remarks, Mr. Chairman. I would be pleased to answer any questions that you or the members may have, or you may wish for Mr. Rusche and I to answer questions collectively after he makes a brief statement. In addition, I would note that your letter of invitation contained a number of questions, to which I can respond orally or, since we are in a particular time bind, I have copies of those prepared which I would be pleased to submit today for the record.

[The prepared statement of Mr. Vaughan follows:]

STATEMENT OF
JAMES W. VAUGHAN, JR.
ACTING ASSISTANT SECRETARY FOR NUCLEAR ENERGY
BEFORE THE
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
COMMITTEE ON ENERGY AND NATURAL RESOURCES
U.S. SENATE

JUNE 25, 1985

Mr. Chairman, it is a pleasure to be here to discuss the Department of Energy's position on extending the Price-Anderson Act--a key subject in the Department's continuing nuclear activities as well as in the viability of the nuclear power option in this country.

I will briefly discuss the recommendations made by the Department in our August 1983 report to Congress on extending the Price-Anderson Act, discuss its relevance to the Department's nuclear operations, comment on the safety record of the nuclear industry, and briefly note how foreign governments have dealt with the indemnification issue. Finally, I will summarize the Department's recommendations for an appropriate course of action with regard to continuing indemnification and liability protection for those organizations involved in nuclear activities.

BRIEF HISTORY OF PRICE-ANDERSON

In 1957, the Price-Anderson Act was added to the Atomic Energy Act of 1954 for the purposes of (1) removing the deterrent to private sector participation in the use of nuclear power presented by the threat of potentially large liability claims in the event of a nuclear accident and (2) to provide the public with an assured, timely source of funds in the event of such an accident.

The original Price-Anderson Act required that persons operating commercial nuclear power reactors producing 100,000 kilowatts or more maintain financial protection in an amount equal to the maximum amount of private insurance available (at that time $60 million) to cover public liability claims that may arise in the event of a nuclear incident. A nuclear incident is the name given to any occurrence (including an extraordinary nuclear occurrence) causing bodily injury, sickness, disease or death, or property loss or damage resulting from the hazardous properties of source, special nuclear, or by-product material. The Act also provided for Government indemnity payments, in an amount not to exceed $500 million, in the event that claims for an accident exceeded the amount of financial protection maintained by the powerplant operator. Government indemnity up to $500 million was also authorized for Government contractors engaged in nuclear activities. The aggregate liability for any person who may be liable for an incident was limited in the Act to the sum of the amount of Government indemnity plus the amount of required financial protection, which resulted in a limitation on liability of $560 million for commercial powerplant operators and $500 million for Government contractors.

The original Act also provided for expiration in 1967 of the Government's authority to indemnify. In 1965, Congress extended the Act until 1977, and identified a number of problem areas relating to the means by which persons might obtain prompt and adequate financial compensation. Therefore, in 1966, Price-Anderson was amended to provide that, in the event of a major nuclear accident, persons who may be liable for the accident would be required to waive certain defenses that would otherwise be available to them under state law. The waiver of defenses are triggered in the case of the declaration of an extraordinary nuclear occurrence. An extraordinary nuclear occurrence is a severe nuclear incident defined by prescribed levels of radiation dose, radiation contamination, property damage, and personal injury. Provisions regarding emergency assistance payments and consolidation of claims were also enacted in 1966.

In 1975, Congress again extended the indemnity provisions of the Act for 10 years (from 1977 to 1987) and added a system of retrospective insurance payments to be provided by the commercial nuclear power utilities in the event of an incident connected with a commercial powerplant. Under this new provision, in the event of a nuclear incident causing damages in excess of the amount of private insurance available, each large commercial nuclear power operator would be assessed a prorated share of damages up to $5 million per reactor per incident. The purpose of this provision was twofold: (1) to eliminate the need for Government indemnity, which occurred when private insurance reached $160 million (in 1979) and a sufficient number of reactors were licensed (in 1982) to meet a level of financial protection totalling $560 million and (2) to increase the limitation on liability above $560 million by $5 million as each new reactor was licensed. Currently there are 95 licensed reactors. Therefore, today the limitation on liability is $635 million ($160 million of private insurance plus $5 million for each licensed reactor).

The provisions regarding Government contractors were not significantly amended in 1975 and the Act has not been amended since that time.

In 1983, the Department of Energy and the Nuclear Regulatory Commission each submitted reports to Congress in accordance with subsection 170(p) of the Act, recommending continuation of the Act as it applies to their respective activities and proposing certain amendments to the Act.

The Department made five recommendations in its 1983 report and concluded that:

o The Price-Anderson contract indemnity system should be continued to ensure furtherance of the Department's statutory mission in research and development, production, defense and other nuclear fields, and protection of the public.

o The present Price-Anderson limit of liability in connection with the Department's contractual activities should be made equivalent to that provided for commercial licensed activities.

o The Price-Anderson Act should not be amended to include coverage for the cost of a precautionary evacuation when no nuclear incident in fact occurs. Experience indicates that the Department's nuclear programs pose no greater need for such protection than other Government programs involving potentially hazardous materials.

o The Price-Anderson contract indemnity system should not be amended to include coverage for acts of theft or sabotage when the activity cannot be traced to a licensed or contractual activity and satisfy the criteria for coverage.

- The Price-Anderson Act should be amended so that the waiver of defenses provision applies to civilian and defense high-level and spent fuel waste facilities.

In the Department's August 1983 report on extending Price-Anderson, we recommended that the liability limit for DOE contractors equal that provided NRC licensees. DOE anticipated that the NRC would recommend an absolute liability cap. When the NRC issued its report in December 1983, the Commission recommended that the absolute liability limitation be changed to an annual limitation, a position with which the Department does not agree.

IMPACT OF PRICE-ANDERSON ON DOE OPERATIONS

The Department's nuclear activities include research and development, testing and production of nuclear weapons, nuclear materials production, naval reactors development, inertial confinement fusion, and defense and commercial radioactive waste. These activities are carried out at a number of diverse facilities. Currently the Department has indemnity agreements with 45 prime contractors (with over 60,000 subcontractors and vendors covered under these agreements through the omnibus provision of the Price-Anderson Act).

An additional 62 contractors have 81 contracts executed pursuant to the Nuclear Waste Policy Act. These contracts provide that the Department will include in its contracts for the operation of any Department of Energy spent fuel and high-level waste facility (e.g., a geologic repository) an indemnity agreement based on the Price-Anderson Act that indemnifies not only the operating contractor but any other person who may be liable for a nuclear incident arising out of, or in connection with, radioactive waste management activities.

During the past 28 years, there has only been one severe nuclear-related incident at Federal facilities. This incident, involving an Army reactor, resulted in the death of three U.S. servicemen. To put this in perspective, in 1984 there were seven work-related fatalities--none resulting from a nuclear accident--among the Department's 165,000 Federal and contractor employees. During that year, there were 304 fatalities in a total Federal civilian work force of approximately 2.8 million employees.

COMMERCIAL NUCLEAR POWER SAFETY

Since the beginning of commercial nuclear power operation in 1957, not a single death has been caused by radiation or other factors resulting from a nuclear incident. Only 112 incidents--none declared an extraordinary nuclear occurrence--have been reported to the commercial nuclear insurance pools since they began operation in 1957. During this period, a total of only $43 million has been paid for third party claims, of which $41 million resulted from the Three Mile Island (TMI) accident. Payments for on-site property damage totaled $488 million, primarily from the TMI accident.

This is an outstanding safety record when compared to a wide range of other activities or technologies, most of which are perceived as being common, ordinary, everyday activities. Since 1957, some 1.4 million people have been killed in automobile accidents; nearly 23,000 in train accidents; some 44,000 in airplane accidents; nearly 200,000 due to fires or explosions (natural gas, etc.); and over 6,000 in coal mining accidents. This list of everyday activities, in which large numbers of people are killed each year, could be extended at length, and yet most of these activities are not perceived as being overly risky by the general public. This is in sharp contrast to commercial nuclear power, where not a single death has been caused by radiation, and yet a large segment of the public appears to be quite fearful about the safety of the industry.

The commendable safety record of the nuclear industry can also be illustrated by comparing it to the risk of being murdered, an event I believe most Americans consider rather remote. What we find, however, is that the latter prospect is not so remote. The Bureau of Justice Statistics estimates that the average American faces a risk of 1 in 133 of becoming a victim of homicide in his or her lifetime. The risk is much higher for certain groups; for example, the risk of homicide for males is estimated to be 1 in 84.

The high degree of safety of nuclear power can also be demonstrated by comparing the fuel cycle risks to the public and to occupational workers resulting from generating electricity from nuclear power versus coal-fired plants. Such comparisons have been required since 1979 as part of the Environmental Impact Statement for nuclear powerplants. The nuclear fuel cycle includes mining, uranium enrichment, fuel processing and fabrication, power generation, fuel storage, transportation, reprocessing, and waste management. The coal fuel cycle contains the equivalent steps but excludes uranium enrichment, fuel fabrication, and reprocessing. In a December 1984 paper authored by a Nuclear Regulatory Commission staff member, the total fuel cycle risk to the general public and plant workers was given as .59 to 1.7 fatalities per plant year for the nuclear fuel cycle and 15 to 120 fatalities per plant year for the coal fuel cycle. In fact, according to the risk estimates in this recent paper, the estimated fatalities per plant year resulting from coal transportation alone exceed the mean estimate of one fatality per plant year for the entire nuclear fuel cycle. This nuclear-to-coal comparison is presented solely to place the nuclear risk in perspective, and is not intended to suggest that electrical generation from coal is not safe. Another study, conducted in 1982, comparing risks on a per-megawatt/year basis found that using petroleum to generate electricity results in about 10 times more fatalities than nuclear powerplants, while use of natural gas in generating electricity results in about 75 percent fewer fatalities than nuclear. The safety record associated with the production of electricity from nuclear powerplants has been excellent and compares favorably with other electrical generation technologies.

It is frequently argued that the public's fear of nuclear power, despite its outstanding safety record, is due to the nature of the risk of nuclear accidents: that is, while the probability of an accident is very low, the potential for damage can be high. Upon further examination, however, this theory appears to explain only part of the public's fear of nuclear power. Otherwise, we would expect the public to have similar or even greater fears about many other situations and activities in which accidents have actually occurred. We need only cite some examples over the past 5 years. In

December 1984, methyl isocyanate leakage at a Union Carbide chemical plant in Bhopal, India, resulted in some 1,700 fatalities and 200,000 injuries. In November 1984, tanks of liquefied natural gas exploded at a storage facility in Mexico City, killing 452 people and injuring over 4,000 others. In February 1984, a leaky gasoline pipeline in Cubatao, Brazil, exploded, killing over 500 people. In July 1981, two aerial walkways collapsed at a hotel in Kansas City, Missouri, killing 114 people. A November 1980 hotel fire in Las Vegas, Nevada, resulted in 85 fatalities. These catastrophic accidents all occurred in non-nuclear related industries and activities.

Nuclear power is safe but it continues to raise public fears. Although there have been no deaths caused by the operation of commercial nuclear powerplants, safety concerns constitute the largest set of reasons for public opposition to nuclear power. Nuclear reactors are designed, built, and operated with multiple safety systems to protect against equipment failure, human error, and natural disasters. Redundant systems monitor, control, and support the safe operation of the reactor at each powerplant. A utility company planning to build a nuclear powerplant is responsible for assuring the public that the plant will be built and operated safely. An Environmental Impact Statement is prepared and approved as part of this process. In the nearly three decades that nuclear energy has been used to produce electricity, it has established itself as one of our safest and environmentally benign energy technologies.

Although the Three Mile Island accident was the worst incident in commercial reactor operating history, the Presidential Commission investigating the accident concluded that the radiation doses received by the general population were so small that there would be no detectable additional cases of cancer, developmental abnormalities, or genetic ill-health as a consequence of the TMI accident. This Commission estimated that the maximum radiation dose was 70 millirems to any individual in the off-site population. For comparative purposes, natural background radiation, which the average American is exposed to each year, is approximately 80 millirems.

While the nuclear industry has a proven safety record, the lack of familiarity by the public with nuclear power and the attention given to any abnormal nuclear occurrence, however minor, continues to raise fears that have no factual basis. For example, immediately after Three Mile Island, a survey conducted by Resources for the Future found 52 percent of the public believed a nuclear powerplant could explode like an atomic weapon, even though such an occurrence is a physical impossibility. Based on other surveys, there are continuing fears and misconceptions associated with the possible escape of radioactivity from normal reactor operations. These fears and misconceptions are not supported by the proven safety record of the industry. Estimates indicate that the average yearly dose to the average American from the normal operation of nuclear powerplants is substantially less than 1 percent of his or her annual dose from natural radiation.

FOREIGN INDEMNIFICATION

Although there are countries that have financial protection systems that do not limit liability, the immediate financial protection afforded the public in the United States is greater than in any other country. In the Federal Republic of Germany, indemnification is provided by private insurance, the government, and the plant operator. Private insurance and the government provide approximately $310 million of coverage. The plant operator then becomes liable for any claims in excess of this amount; however, at this point, payment is, of course, limited to the assets of the operator.

In Switzerland, private insurance and government indemnification provide for up to approximately $450 million of insurance. Additional amounts could be made available through the plant operator's assets. Lastly, if additional funds are still required to pay claims, the government will provide them but only after action by the Parliament. Two of the four nuclear powerplant operators in Switzerland are utilities that are largely government owned. Thus, the operator's assets are largely the government's assets and the Swiss Government would ultimately be responsible for compensating claims.

In the Japanese system of indemnification, the operator must carry $39 million in private insurance and there is no limit on its liability. In the event there are insufficient funds for payment of claims after the assets of the utility are exhausted, the Japanese Parliament will decide on the level of additional funds it will provide to pay claims.

FINANCIAL PROTECTION FOR DOE CONTRACTORS

Although the Department's contractors have compiled an excellent safety and health record over the last three decades, the nature of a nuclear accident (i.e., high possible consequence and low probability) is such that some form of financial protection is necessary for them to continue doing business with the Department. In this regard, the Department continues to support the rationale upon which it based its 1983 recommendation to Congress:

> A system of financial protection that provides the Department with authority to indemnify its contractors and subcontractors involved in nuclear activities is necessary for the Department to carry out its statutory mission. Without some form of indemnification, contractors at all levels may well refuse to continue doing business with the Department.

Commercial nuclear power is vital to achieving our goals of energy strength, stability, and security. Approximately 15 percent of our electricity is produced by commercial nuclear powerplants. The Government commitment to nuclear power includes the safe management and transportation of nuclear waste materials, the safe economical enrichment of uranium, and financial protection for the public in the event of an accident. In order to facilitate the Department's congressionally mandated responsibility for managing nuclear waste activities, the Department also continues to support the rationale upon which the nuclear waste related recommendation was made in its 1983 report:

> All high-level waste activities should be covered explicitly by some system of financial protection. The states have expressed the concern that possibly not all high-level waste operations are covered under the Price-Anderson system. The Department of Energy believes that the financial protection system adopted by Congress that insures against losses from nuclear accidents should include a provision that removes any doubt on the part of the states that Nuclear Waste Policy Act operations are indemnified. Such a step would go a long way towards removing an obstacle to state cooperation.

FINANCIAL PROTECTION FOR NRC LICENSEES

The financial protection made available by the present Price-Anderson system balances the limited liability granted the nuclear plant operator and others who may be liable against more certain, rapid, and widely available compensation for the public. Any changes and reforms that would alter this balance should be considered with great care.

The Department, therefore, considers that two guiding principles should lie behind any proposal to modify Price-Anderson:

- Although government regulation of the nuclear industry already ensures safety to a greater extent than in any other industry, a balanced Federal system of financial protection should continue to exist. The primary reason for this guiding principle is the high consequence/low probability nature of nuclear accidents.

- Any system of financial protection, which simultaneously meets the needs of the public and of the industry, should balance these needs in some equitable manner. The Price-Anderson system has "worked" in its 28 years of existence because it has balanced the public's need and industry's need. The present system reflects the public's desire for financial protection against extraordinary nuclear occurrences and industry's concern for a limit on its liability. Congress has carefully balanced these needs in the past, resulting in a system under which industry guarantees the availability of a substantial insurance fund that allows for the timely compensation of all parties. This is in stark contrast to other types of private protection with their attendant solvency problems. Also, in the case of an extraordinary nuclear occurrence, the waiver of defense provision would prohibit industry from using defenses that would otherwise preclude timely compensation and claimants would not need to prove who is at fault. In return for these unique benefits, Price-Anderson imposes a limitation on private liability.

A number of proposals have been made that would significantly alter the original intent of the Price-Anderson Act. One such proposal, S. 445, would: (1) remove the limitation on liability; (2) eliminate the 20-year statute of limitations on claims; and (3) eliminate the requirement that an "extraordinary nuclear occurrence" must be declared before defendants are required to waive legal defenses ordinarily available to them under state law. Adoption of the provisions in this proposal is not justified nor equitable, and represents, in effect, punitive treatment for the nuclear industry. Removing the limitation on liability would not make unlimited funds available for compensation in the event of a nuclear accident, since liable parties can only provide amounts up to the limits of their assets. Elimination of the statute of limitations presents a particularly perplexing legal situation, where suits could be brought decades after an event, well after any basis for equitable resolution has dissipated. Finally, the elimination of the concept of "extraordinary nuclear occurrence" would encourage and give unfair advantage to plaintiffs in lawsuits for even minor "incidents" having no real environment or health impact, because the nuclear industry would be presumed to be liable even if they were not. In effect, such a provision would declare every "incident" to be equivalent to a serious nuclear accident for legal purposes, a position which has no technical merit. This is inconsistent with the practices followed in other industries; for example, although commercial airlines may carry $500 million liability insurance, claims against them are normally subject to state tort law without having to waive any legal defenses.

The Department does not support changes which would implement unlimited liability, eliminate the statute of limitations, or change the definition of an "extraordinary nuclear occurrence" in such a way as to make minor incidents equivalent to nuclear accidents.

Introduced by Senators McClure, Dole and Simpson, S. 1225 incorporates a number of important features into Price-Anderson and will affect DOE operations in four areas. First, S. 1225 would increase the financial protection available to the public as a result of DOE contractor activities to an amount equal to the financial protection available for NRC licensees. Under this proposal, the limitation on liability could approach $2.4 billion, depending on the number of licensed reactors and the retrospective premium assessed each reactor. Second, the bill would explicitly apply Price-Anderson to DOE activities involving the transportation, storage, or disposal of nuclear waste. Third, S. 1225 would establish a requirement for a Presidential Report as well as a mechanism for congressional review of DOE contractor accidents should liability claims exceed the amount of funds available under Price-Anderson. Fourth, the bill would extend the Department's authority to enter into indemnification agreements with DOE contractors for 25 years.

A system of financial protection that would include provisions similar to S. 445 would no longer balance the public's desire for rapid, certain, and widely available compensation and industry's need for liability protection. Society does not deprive any other enterprise of the benefit of tort law while imposing unlimited liability. It is unlikely that a system of financial protection that provides the public with prompt and certain payment could exist if the balance between the public's need and industry's need is not equitable. S. 1225 appears to reflect this important balance.

SUMMARY AND RECOMMENDATIONS

With regard to DOE contractors and operations, we recommend that:

1. A Federal system of financial protection covering persons who may be injured by a nuclear incident as well as persons who may be liable should continue to exist, but a limitation on liability should be retained. Such a system is necessary for the Department to carry out its statutory mission.

2. The waiver of defenses provision should explicitly apply to nuclear incidents connected with civilian and defense high-level waste and spent fuel facilities.

With regard to NRC licensees and commercial operations, the Department recommends that:

1. Even though the nuclear industry has an outstanding safety record, the potential risk of a high consequence nuclear accident--despite its low probability--has led to wide support for some form of special financial protection covering persons who may be injured and persons who may be liable. This special protection, with appropriate limitations on liability, should be continued.

2. There is the need for a balance between the special financial protection and benefits provided the public and the protection that industry has given up that would otherwise be available under tort law.

This concludes my statement, Mr. Chairman. I will be happy to answer any questions.

Senator **Domenici**. Well, let's take your inquiries one at a time, and let me ask Mr. Rusche how long he thinks he will take to testify?

Mr. **Rusche**. Five minutes.

Senator **Domenici**. Let's proceed with Mr. Rusche, then.

STATEMENT OF HON. BEN C. RUSCHE, DIRECTOR, OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT, DEPARTMENT OF ENERGY, ACCOMPANIED BY SUSAN KUZNICK, ATTORNEY-ADVISER (GENERAL), OFFICE OF GENERAL COUNSEL

Mr. **Rusche**. Thank you, Mr. Chairman, and members of the subcommittee.

I appreciate the opportunity to participate in your important review of the Price-Anderson Act. I would like to focus my attention this morning on deliberations particularly as they relate to indemnification of the Nation's high-level nuclear waste disposal program.

First, I'd hasten to point out that we hold the view and operate with the recognition that present Price-Anderson coverage applies to the Department's high-level nuclear waste activities. Section 170(d) of the Atomic Energy Act authorizes indemnification not only for nuclear reactors, but for other activities under contract for the benefit of the United States.

Thus, the Department has executed contracts with the owners and generators of spent fuel and high-level waste under which DOE agrees to take title to the material and provide transportation to a DOE facility and dispose of such material. Those contracts stipulate that a Price-Anderson indemnity agreement will be included in the contracts for the operation of DOE facilities handling disposal of high-level waste and spent fuel.

The agreement will apply to nuclear incidents at a central location, or in the course of transportation to or from a central location. The indemnity provisions will continue beyond the term of the disposal contracts. We are aware that some would be more comfortable if the present language of the statute were written for explicit coverage of nuclear waste activities for purposes of clarification.

We support making the Price-Anderson coverage explicit to high-level radioactive waste program activities, while restating our conviction that the present language of the act already permits indemnification coverage for these operations.

One area deserving particular attention of this committee, however, is the waiver of defense provision of Price-Anderson which, as presently written, does not explicitly apply to nuclear waste activities. The Department supports language to clearly extend that provision to waste activities. The provision imposes what amounts to strict liability for any event found to be an extraordinary nuclear occurrence. This provision would be of great benefit to claimants in that it streamlines the processing of claims.

The Department recommends that this extraordinary nuclear occurrence facilitation procedure be extended to apply to incidents connected with civilian and defense high-level waste and spent fuel activities, including transportation, storage, and disposal operations.

With respect to whether the present Price-Anderson indemnification limitation is adequate to provide sufficient coverage for any incident which could be anticipated in the nuclear waste field, I would refer back to the original intent of Price-Anderson.

The Congress clearly intended, as is explicitly provided in 42 U.S.C. 2210(e), that in the event of a nuclear incident involving damages in excess of that amount of aggregate liability, the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequences of a disaster of such magnitude.

I have seen no definitive method of arriving at a precisely appropriate upper limit for liability. It is my belief, however, that Congress acted wisely in stipulating an upper limit for providing rapid, assured funds, while reserving for itself the responsibility to take whatever action may be called for in the future to assure that necessary public protection is provided.

The foregoing observations are also germane to whether an altogether separate scheme of indemnification is needed for high-level waste activities. To summarize, we think not for three reasons:

The present system was crafted in a sufficiently broad manner to encompass both the defense and the commercial high-level waste program. The ENO provisions can be readily broadened to encompass waste activities, and the limit of total liability coverage is tied to a firm commitment by the Congress to revisit any incident where loss exceeds coverage to assure public protection.

Nuclear waste entails no inherently unique characteristics to warrant a separate system from the nuclear operations. In designing the Price-Anderson system, Congress has provided the public with an assured, substantial, and timely source of funds for payment of claims in the event of a nuclear accident. This broad concept has worked well. We believe that the system should be preserved and applied to the activities conducted in compliance with the NWPA [Nuclear Waste Policy Act of 1982].

Finally, in consonance with what we understand to be the spirit and intent of the NWPA, the Department believes that liability coverage for high-level waste programs should be financed out of the nuclear waste fund. As the Congress stipulated in the Nuclear Waste Policy Act of 1982, the fund is financed by fees paid by those who will benefit from this program—that is, those who have generated the waste.

This applies to high-level waste resulting from defense activities, as well as that commercially generated, since the President recently approved the Secretary of Energy's recommendation that high-level nuclear waste generated in connection with the national defense programs use the same deep geologic permanent repositories to be developed for commercially generated waste.

The exact cost breakouts for payments into the fund will have to be determined on the basis of discussions which are currently underway to develop an equitable cost allocation system between these two sources, but it is from these revenues into the fund that liability coverage should be provided, we believe.

Mr. Chairman, this concludes my brief remarks, and I'd be glad to participate as you think appropriate.

[The prepared statement of Mr. Rusche follows:]

TESTIMONY OF

BEN C. RUSCHE
DIRECTOR
OFFICE OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT
U.S. DEPARTMENT OF ENERGY

Mr. Chairman and Members of the Subcommittee

Thank you for the opportunity to participate in your important review of the Price-Anderson Act. I will focus my attention on the deliberations as they relate to indemnification of the Nation's high-level nuclear waste disposal program.

First, I would hasten to point out that we hold the view and operate with the recognition that present Price-Anderson coverage applies to the Department's high-level nuclear waste activities. Section 170 (d) of the Atomic Energy Act authorizes indemnification not only for nuclear reactors but for "other activities under contract for the benefit of the United States ...." Thus, the Department has executed contracts with the owners and generators of spent fuel and high-level waste under which DOE agrees to take title to the material and provide transportation to a DOE facility and dispose of such material; and those contracts stipulate that a Price-Anderson indemnity agreement will be included in DOE contracts for the operation of DOE facilities handling disposal of high-level waste and spent fuel. The agreement will apply to nuclear incidents at a control location, or in the course of transportation to or from a control location. The indemnity provisions will continue beyond the term of the disposal contracts. We are aware that some would be more comfortable if the present language of the statute were rewritten for explicit coverage of nuclear waste activities for purposes of clarification. We support making the Price-Anderson coverage explicit to high-level radioactive waste program activities while restating our conviction that the present language of the Price-Anderson Act already permits indemnification coverage for nuclear waste operations.

One area deserving the particular attention of this Committee, however, is the waiver of defenses provision of Price-Anderson, which as presently written does not explicitly apply to nuclear waste activities. This Department supports language to clearly extend that provision to waste activities. The provision imposes what amounts to strict liability for any event found to be an extraordinary nuclear occurrence (ENO). This provision would be a great benefit to claimants in that it streamlines the processing of claims. The Department recommends that this extraordinary nuclear occurrence facilitation procedure be extended to apply to incidents connected with civilian and defense high-level waste and spent fuel activities including transportation, storage, and disposal operations.

With respect to whether the present Price-Anderson indemnification limitation is adequate to provide sufficent coverage for any incident which could possibly be anticipated in the nuclear waste field, I would refer back to the original intent of Price-Anderson. The Congress clearly intended, as explicitly provided in 42 USC Section 2210 (e) that, "in the event of a nuclear incident involving damages in excess of that amount of aggregate liability, the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequences of a disaster of such magnitude." I have seen no definitive method of arriving at a precisely appropriate upper limit for liability. It is my belief, however, that the Congress acted wisely in stipulating an upper limit for providing rapid, assured funds, while reserving for itself the responsibility to take whatever action may be called for in the future to assure that necessary public protection is provided.

The foregoing observations are also germane to whether an altogether separate scheme of indemnification is needed for high-level waste activities. To summarize, we think not for three reasons: The present system has been crafted in a sufficiently broad manner to encompass both defense and commercial high-level waste programs; the ENO provisions can be readily broadened to emcompass waste activities; and, the limit of total liability coverage is tied to a firm commitment by the Congress to revisit any incident where loss exceeds coverage to assure public protection.

Nuclear waste entails no inherently unique characteristics to warrant a separate system from other nuclear operations. In designing the Price-Anderson system, Congress has provided the public with an assured, substantial, and timely, source of funds for payment of claims in the event of a nuclear accident. This broad concept has worked well; we believe that the system should be preserved and applied to the activities conducted in compliance with the Nuclear Waste Policy Act.

Finally, in consonance with what we understand to be the spirit and intent of that NWPA, the Department believes that liability coverage for high-level waste programs should be financed out of the Nuclear Waste Fund. As the Congress stipulated in the Nuclear Waste Policy Act of 1982, the Fund is financed by fees paid by those who will benefit from this program, those that have generated the wastes. This applies to high-level waste resulting from defense activities as well as that commercially generated since the President recently approved the Secretary of Energy's recommendation that high-level nuclear wastes generated in connection with national defense programs use the same deep-geologic permanent repositories to be developed for commercially generated nuclear waste. The exact cost breakouts for payments into the fund will have to be determined on the basis of discussions currently underway to develop an equitable cost-allocation system between the defense and commercial waste programs. It is from these revenues into the Fund that liability coverage should be provided.

Mr. Chairman, this concludes my testimony. I will be pleased to follow-up on any of these observations or to answer any questions.

QUESTION 1: A discussion of the overall liability issue with respect to DOE's activities in connection with the transportation, storage, and disposal of spent fuel and high-level wastes. Who would ultimately be held liable for accidents in connection with the waste program?

ANSWER: Present Price-Anderson coverage applies to the Department's high-level nuclear waste activities. Under the Price-Anderson Act DOE indemnity system, DOE would indemnify any person held liable for a nuclear incident arising out of high-level waste and spent nuclear fuel disposal, storage, and transportation activities and would, therefore ultimately be financially responsible for payment of liability claims. If these claims are paid out of the Nuclear Waste Fund, those persons who pay into the fund (generators of the waste) would be the persons who finance the payments.

If an incident were also covered by the financial protection required by NRC under the Price-Anderson Act, which presently is the case for transportation from a nuclear reactor, current DOE regulation would require that DOE indemnity not be applicable and claims would be paid from the financial protection NRC requires that nuclear utilities provide. Presently, that would be up to $160 million provided by the nuclear insurance pools and for claims above that amount, up to $5 million per operating reactor.

QUESTION 2: A discussion of the types of accidents envisioned, and estimated costs arising from such accidents, in connection with the transportation, storage, and disposal of high-level wastes.

ANSWER: The transportation of nuclear materials over U.S. public highway and railway systems has been conducted for more than a quarter of a century with an excellent industrial safety record. While there have been a number of collisions and trucks overturning while carrying nuclear materials, in none of these cases has anyone been harmed by the release of radioactive materials. While the Department takes every effort to prevent mishaps, such conventional shipping and handling accidents can be anticipated. Protection of the public and the industrial workers handling nuclear materials is achieved by close Federal regulation, limitations on container contents according to quantities and types of radioactivity, and design of the shipping packages and containers to insure that nuclear materials are contained even in the event of a severe accident.

It is difficult to calculate clean-up costs of a nuclear waste incident without a rather detailed grouping of assumptions including such variables as quantities and type of waste involved, age of the waste material, a source term release analysis taking into account these variables, details on the location of the incident in terms of population density, and a myraid of other assumptions necessary to form a basis for developing accident scenarios. Earlier accident scenarios were made using 150 day old spent-fuel whereas current plans call for transporting only older (ten-year old fuel rods) and cooler cargo. Also, source-terms are presently being re-examined. Brookhaven National Laboratory has been tasked to evaluate the risk of nuclear waste activities utilizing present-day assumptions. Lower source-term projections have led the Nuclear Regulatory Commission (NRC) to reexamine Federal regulations for the safeguarding of shipments. The nature and types of operations involved in nuclear waste storage and disposal facilities are such that off-site releases do not seem to present significant or unique problems not encountered in other nuclear facilities.

QUESTION 3: The applicability of DOE's current criteria for extraordinary nuclear occurences (ENO's) to waste program activities.

ANSWER: DOE's criteria for determining whether an ENO has occurred could apply to nuclear accidents occurring in DOE's waste program. These criteria are published in 10 CFR Part 840 and are substantively identical to the Nuclear Regulatory Commission (NRC) criteria for making such a determination. (10 CFR Part 140, Subpart E). In April 1985, the NRC published a proposed rule giving three options for amending their ENO criteria in order "to simplify the administrative criteria" and "to avoid the problems encountered by the Commission in applying the existing criteria to the accident at the Three Mile Island nuclear plant (TMI)." DOE is reviewing the NRC proposals with regard to its effect on NRC-licensed powerplants. We are also reviewing the criteria from the standpoint of how similar criteria would affect DOE nuclear facilities, including waste facilities. Comments are due to the NRC by August 7, 1985, and we intend to complete our review before that time.

In any event, we believe that there is no need to amend Price-Anderson to permit review or amendment of the ENO criteria. If changes are necessary, they can be accomplished through the rulemaking process.

Notwithstanding the applicability of the ENO criteria to a waste facility, a key benefit of an ENO finding, the waiver of defenses provision, is not presently applicable to an ENO at a waste facility and we recommend the Act be amended to provide such applicability.

QUESTION 4: A discussion of financing options for compensating victims of accidents arising from the waste program. If funds were to be drawn proportionately from the nuclear waste fund and from the Federal treasury, what methods could DOE use to determine an equitable apportionment?

ANSWER: In accordance with the spirit and intent of NWPA, the Department believes that liability coverage for high-level waste programs should be financed out of the Nuclear Waste Fund. This is in keeping with the principle embodied in the NWPA that beneficiaries bear the cost of waste disposal. The Fund will recieve its revenues from both commercial and defense waste generators and fees will be paid by both.

QUESTION 5: A discussion of the post-closure perpetual-care fund as it relates to liability-claims set-asside funds relates to liability-claims set-aside funds.

ANSWER: DOE has not yet addressed the issue of a post-closure perpetual care fund, recognizing that closure will not occur for over 100 years. However, DOE would be required to seek a license amendment for permanent closure (under 10 CFR Section 60.51) and issues regarding post-closure care would be addressed at that time.

QUESTION 6: Any other liability issues that are particularly relevant to the nuclear waste program.

ANSWER: We do not believe that the nuclear waste program poses any radiological hazards significantly different from other nuclear facilities, and we believe that liability protection for these risks can be dealt with under the Price-Anderson Act, with certain minor changes such as extending the waiver of defenses provisions to be applicable for an ENO

QUESTION 7. Recommended changes to S. 1225, expecially with respect to waste disposal activities, and the means by which DOE can assure adequate compensation to the public for accidents involving or arising from the nuclear waste dispsal program.

ANSWER: DOE does not support those provisions requiring that some liability claims be paid from sources other then the Nuclear Waste Fund.

Senator **Domenici**. Thank you very much.

For the Senators who were not present, Secretary Vaughan indicated that he has in attendance with him—what is her title in the Department?

Mr. **Vaughan**. Susan Kuznick, and she's from our Office of General Counsel.

Senator **Domenici**. So that in that respect, the Secretary has indicated that on legal issues she may be prepared to assist us in any way that we may desire.

Let me first say to the Senators who are here, and in particular to you, Mr Chairman, in your absence I had brief opening remarks in which I complimented you for the bill which you have introduced, along with Senator Simpson.

As your subcommittee chairman of the subcommittee that has jurisdiction, I regret that I'm not going to be able to participate very long today. I've explained to you why I can't, but I do pledge to you a maximum effort on the part of the subcommittee so that we can at the earliest possible time be ready to go to full committee on this matter at your pleasure and at your disposition. Obviously this is one of the most important pieces of legislation we have before us.

Having said that, I have just—well, let me ask if the Senators have opening remarks. I must leave in about 5 minutes. I wonder if the Senator would permit me to ask two or three questions, and then I am going to turn the meeting over to the distinguished chairman.

I just wanted to ask a couple of questions. One is with reference to the Department's waste isolation pilot project, commonly known as WIPP. As it now stands, does Price-Anderson indemnification apply to the activities at WIPP?

Mr. **Vaughan**. Yes, sir.

Senator **Domenici**. Do you think that clarification in S. 1225, especially the specific indemnification of DOE's activities related to transportation, storage, and disposal of high-level and transuranic wastes is preferable to the current language which you have interpreted to encompass indemnification coverage, either of you, Mr. Rusche or Secretary Vaughan?

Mr. **Rusche**. Perhaps there could be some clarification, but I think we still would believe that the present language gives us authority and provides the coverage.

Senator **Domenici**. I understand. Why does the Department of Energy not normally require contractors to purchase liability insurance from the private insurance pools even though we have the Price-Anderson? Wouldn't this requirement help expand the capacity of the nuclear insurance pools?

Mr. **Vaughan**. I'm going to ask Ms. Kuznick to respond.

Senator **Domenici**. Yes, ma'am.

Ms. **Kuznick**. Yes, Mr. Chairman. We do not require our cost reimbursement contractors to purchase insurance, partly because in those special situations we would reimburse the contractor for any costs that it incurred, and therefore the Government would be paying for the insurance premiums. And since the Government does have resources available in case of a major incident, we could afford to pay the liability claims that way.

Senator **Domenici**. So your answer is, we do not?

Ms. **Kuznick**. No; we do not require it of our nuclear operators at our nuclear facilities.

Senator **Domenici**. Thank you.

Mr. **Vaughan**. You will remember, Mr. Chairman, that most of the operations of the Department contractors involved in nuclear activities are contractor-operated facilities which are owned by the DOE, and so these are on a cost-reimbursable basis rather than a more typical form of commercial contract.

Senator **Domenici**. I have some additional questions that I'm going to submit for the record, but I wanted to ask one with reference to the issue of sabotage or the like. Where is the coverage now for an accident—for injuries caused by that kind of event? Is there any?

Ms. **Kuznick**. I'd like to answer that question.

Senator **Domenici**. Yes, please.

Ms. **Kuznick**. Right now, the way our regulations read, any accident at one of our facilities or in the course of transportation to or from our facility, or if it's contractor personnel for whom the contractor has some responsibility, any incident that would occur in those situations would be covered, whether it was through theft or sabotage.

However, if there was a diversion of the material, it would no longer arise under the course of our contract activities, and it would not come under Price-Anderson coverage. It would be similar to any other sabotage activity within the United States, and there probably would be no coverage unless Congress reviewed that particular situation and took some action.

Senator **Domenici**. What does the word "diversion" mean as you gave it in that answer?

Ms. **Kuznick**. Well, for example, in the course of transportation to a facility, if some nuclear material was released, that would be covered by Price-Anderson. But if someone somehow took some material away from the course of transportation and it was later found somewhere and no one could trace the material for an NRC licensee facility or a DOE facility, you certainly could sue whoever was responsible, but if it was a saboteur it would be unlikely that you could recover.

Senator **Metzenbaum**. Mr. Chairman.

Senator **Domenici**. Yes.

Senator **Metzenbaum** You had asked the question, and before you leave I thought you might get some elaboration on the answer. As I understand your question, it was why does the Government not require private contractors to provide additional insurance at Government owned, contractor-operated facilities, I think the answer was, we could afford to pay the liability.

Now as I understand it, am I not correct that in being able to afford it, it would be a direct charge against the Federal Treasury? There is no particular fund that would be used. Isn't that correct?

Ms. **Kuznick**. Yes; that is correct. There's a general policy in the Federal Government to self-insure because it's not a situation like a corporation who could go bankrupt and has a limitation on the assets. In that situation, it's preferable for public protection to have liability insurance so that there will be moneys available.

In the case of the Government, there is a larger pool of funds available. We can't go bankrupt, so to speak.

Senator **Metzenbaum**. The Federal treasury, you mean, that larger pool? Is that what you're saying?

Mr. **Vaughan**. Yes; that's correct, Mr. Metzenbaum. I think the subject that we're covering today, for example, Price-Anderson, shows the wisdom of that kind of a practice. I commented, and I think it may have been before you came in, that the Federal Government has only had to pay $271,000 over a period of over 25 years; yet, if we had required contractors to carry insurance, those costs would have been passed to the Government as part of the cost of doing business and would have been in the millions of dollars.

Senator **Metzenbaum**. We've never really had a major accident where there was exposure to substantial claims. Isn't that correct?

Mr. **Vaughan**. That is correct. And as you are aware, the Department has been, is now, and will continue to be fully committed to a very vigorous safety program for protection of the public and the environment at all of its facilities. That's inherent in the use of nuclear power both at our facilities and commercially, as well as our other nuclear activities. And it is through that mechanism that we intend to continue to assure an adequate safety record.

Senator **Domenici**. I am going to yield to the chairman of the full committee, and thank you very much.

Senator McClure.

The **Chairman** [presiding]. Before leaving, Senator Domenici, just let me thank you for scheduling these hearings on the legislation which Senator Simpson and I have introduced. I want to publicly thank you for your commitment, as well. I'll have other opportunities, I'm sure, but I wanted to express that this morning.

Senator **Domenici**. Thank you, sir.

The **Chairman**. Senator Metzenbaum, I think you had indicated that you wished to make an opening statement. Both you and I were not present at the opening of the hearing, and I apologize for that. I'm sure you had other commitments that kept you away, too.

I will recognize you and others who wish to make an opening statement.

Senator **Metzenbaum**. I thank you, Mr. Chairman.

Senator **Ford**. Mr. Chairman, may I just say that the distinguished Senator from Ohio, for a change, had a legitimate excuse this morning for being late. [Laughter.]

Senator **Ford**. His 2-year-old granddaughter was staying with him, and he just couldn't get away.

Senator **Metzenbaum**. That's right. I know my priorities. [Laughter.]

STATEMENT OF HON. HOWARD M. METZENBAUM, A U.S. SENATOR FROM THE STATE OF OHIO

Senator **Metzenbaum**. Mr. Chairman, as a Senator from the State of Ohio, these hearings are of great interest to me. My State has just experienced a very serious commercial nuclear accident near Toledo, and a major scandal involving the DOE Uranium Feed Material Facility in Fernald.

We must ask ourselves if the Price-Anderson Act encourages operators to do all they can to protect the health and safety of workers and the public. All indications are that the answer is a resounding "no."

Clearly the current law provides inadequate compensation and coverage, and offers little incentive for operators to accent safety in their operation.

At Davis-Besse we have a case where the plant operators have for 6 years failed to comply with NRC orders to correct critical deficiencies in plant equipment. As a matter of fact, I remember like yesterday a tremendous banner headline across the top of the Cleveland Plain Dealer, many years ago, about numerous deficiences found in the Davis-Besse plant.

And recently that facility experienced a near-miss. We got by that one. How many more can we get by? I don't think that Congress intended the Price-Anderson Act to shield companies from liability when an accident is caused by their own negligence and irresponsibility. Perhaps we should consider making company executives subject to criminal penalties if plants under their jurisdiction suffer an accident due to gross negligence.

I am also concerned that not enough attention is given to the situation at DOE nuclear facilities. I believe it would be a grave mistake to overlook that area. An August 1981 General Accounting Office report raised serious questions about the safety of the 280 DOE nuclear facilities and the adequacy of the Department's plans to deal with a major accident.

It should be noted that there is an inherent conflict of interest in the DOE running and regulating its own facilities. It is not unlike the situation that originally developed in this country when the Atomic Energy Committee had a two-fold responsibility. One was to create nuclear power plants, to develop nuclear power, and the other was to concern itself about the safety and the security of the people of this country. They gave all of the emphasis to the first part, and very little to the second.

But besides the conflict of interest that is inherent in this dichotomy between running and regulating its own facilities, there is a lack of incentive for any safety or responsibility. The Price-Anderson Act sets a ridiculously low liability limit of $500 million for an accident, and the contractors operating the plants are totally exempt from liability.

There is absolutely no reason why the Department of Energy or its contractors should care at all about safety under these conditions. This, as I see it, is nuclear socialism as its worst. Those who are involved in it would not like that kind of designation, but the reality, the facts, cannot be denied.

The situation is not going to get any better. Soon communities will also be faced with the problems of dealing with the transportation, storage, and disposal of radioactive waste. Congress has a responsibility to provide incentives which will compel DOE and the contractors to put a premium on the health and safety of citizens and communities. Shortly, I plan to introduce a bill to amend the Price-Anderson Act to eliminate the liability limit for accidents at DOE nuclear facilities, to hold contractors liable for their negligence, and to extend the coverage of the act to precautionary evacuations, acts of sabotage and terrorism, and the transport, storage, and disposal of nuclear waste material.

I am also looking into the possibility of an amendment which will hold executives of commercial facilities responsible for gross negligence. In fact, I would look forward to working with industry executives as well as the Department of Energy in connection with that contemplated legislation.

At issue is not whether we need a nuclear program. The issue is the right of all citizens to be protected from abuses and irresponsibilities of Government Bureaucrats and contractors. I intend to see to it that we move in the direction of safety and security in protecting the public and holding those people responsible who should be held responsible when there has been gross negligence as far as the public safety is concerned.

Mr. Chairman, I have a long statement. I ask that the entire statement be included in the record.

[The prepared statement of Senator Metzenbaum follows:]

U. S. Senator Howard M.
METZENBAUM
of Ohio

Committees
Budget
Energy and Natural Resources
Human Resources
Judiciary

202 224 2315

STATEMENT OF SENATOR HOWARD M. METZENBAUM
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
SENATE ENERGY AND NATURAL RESOURCES COMMITTEE
JUNE 25, 1985

As a Senator from the State of Ohio, these hearings are of great interest to me. My state has just experienced a very serious commercial nuclear accident near Toledo, and a major scandal involving the Department of Energy's Uranium Feed Material Facility in Fernald.

We must ask ourselves if the Price-Anderson Act encourages operators to do all they can to protect the health and safety of workers and the public.

All indications are that the answer is a resounding no.

Clearly, the current law provides inadequate compensation and coverage, and offers little incentive for operators to accent safety in their operations.

At Davis-Besse, we have a case where the plant operators have for 6 years failed to comply with NRC orders to correct critical deficiencies in plant equipment.

As a result, there was a very serious incident, a near miss.

I do not think that Congress intended for the Price-Anderson Act to shield companies from liability when an accident is caused by their own negligence and irresponsibility.

Perhaps we should consider making company executives subject to criminal penalties if plants under their jurisdiction suffer an accident due to negligence.

I am also concerned that not enough attention is given to the situation at DOE nuclear facilities.

I believe it would be a grave mistake to overlook this area.

An August, 1981 General Accounting Office (GAO) report raised serious questions about the safety of the 280 DOE nuclear facilities, and the adequacy of the Department's plans to deal with a major accident.

Another GAO report in September, 1981 concluded that the $500 million liability limit for these facilities is entirely too low.

There have been many examples to support those findings.

As I already mentioned, we are just now getting all of the facts concerning a major scandal at the Fernald, Ohio plant.

DOE admitted that 96 tons of uranium were released into the air and 73 tons into the water between 1951 and the present.

There are 338 tons of uranium unaccounted for, and most likely have also been released into the environment.

A preliminary assessment by the EPA found that radiation doses to citizens living near the plant between 1956 and 1969 were comparable to doses received by uranium miners.

The situation at Fernald seems to be a microcosm of an industry-wide pattern.

At the Rocky Flats, Colo., Plutonium Components Plant, there have been a series of accidents and several fires involving plutonium.

At the Hanford Plutonium Works in eastern Washington, 115,000 gallons of high level radioactive waste leaked into the soil and groundwater underneath the site over a 50 day period in 1973.

In Senate hearings in 1980, senior plant engineers stated they were ordered by DOE officials to cover up subsequent leaks at the Hanford facility.

At that hearing, former NRC Chairman Joseph Hendrie stated that if the Hanford facility was regulated by the NRC, it would be shut down because the storage tanks were not licensable.

Within the last 3 years, it has been discovered that plutonium-contaminated wastes at the Savannah River Plant in South Carolina were disposed in cardboard boxes in shallow burial pits.

For all we know, these incidences represent the mere tip of the iceberg. DOE has certainly never been forthcoming about the problems at its facilities.

To a large extent, these safety problems result from DOE's inherent conflict of interest in running and regulating its own facilities.

But they also result from the lack of incentives for any safety or responsibility

The Price-Anderson Act sets a ridiculously low liability limit of $500 million for an accident, and the contractors operating the plants are totally exempt from liability.

There is absolutely no reason why DOE or its contractors should care at all about safety under these conditions, and the examples I have already recounted show that this is precisely what is happening.

This is nuclear socialism at its worst.

The situation is not going to get any better.

Soon, communities will also be faced with the problems of dealing with the transportation, storage and disposal of radioactive wastes.

Congress has a responsibility to provide incentives which will compel DOE and contractors to put a premium on the health and safety of citizens and communities.

Shortly, I plan to introduce a bill to amend the Price-Anderson Act to eliminate the liability limit for accidents at DOE nuclear facilities, hold contractors liable for negligence, and extend the coverage of the act to precautionary evacuations, acts of sabotage and terrorism, and the transport, storage and disposal of nuclear waste and material.

I am also looking into the possibility of an amendment which will hold executives of commercial facilities responsible for negligence.

At issue is not whether we need a nuclear program.

The issue is the need to include in the national security equation the right of citizens to be protected from abuses and irresponsibilities of government bureaucrats and contractors.

The reauthorization of the Price-Anderson Act provides us with the opportunity to make dramatic strides in protecting those rights. We must take advantage of that opportunity.

The **Chairman**. It will be included in the record.

Senator **Metzenbaum**. I thank you, Mr. Chairman.

The **Chairman**. Senator Evans, did you have an opening statement you would like to make?

Senator **Evans**. No. I will wait for questions.

The **Chairman**. Senator Bingaman.

Senator **Bingaman**. No.

STATEMENT OF HON. JAMES A. McCLURE, A U.S. SENATOR FROM THE STATE OF IDAHO

The **Chairman**. As I indicated in my comments to Senator Domenici, I was unable to be here for the opening of the hearing not because of a lack of interest in the legislation, obviously, being a coauthor of the legislation I am very interested, but because I had a meeting with Secretary Schultz.

I do thank Senator Domenici for holding the hearing this morning. I think it is an important action on our part to determine what the limits of liability and in what form they will be, if indeed there are limits, and how compensation will be paid in the presence of absence of limits of liability.

The original Price-Anderson Act was enacted almost 30 years ago when the nuclear power industry was in its infancy and very little was known about the potential consequences of nuclear accidents. The act was intended to serve two major purposes: First, to eliminate the disincentives of unknown risk exposure and thereby promote commercial development of nuclear power; and second, to provide a predictable and assured mechanism to compensate the public for losses in the event of a nuclear accident.

The act has certainly met both of those objectives quite adequately, and with no burden to the taxpayers in doing so. So at this juncture one might wonder why we even need to renew the Price-Anderson Act at all. We now have 95 commercial nuclear powerplants licensed to operate, more than any other nation in the world. Isn't it time to let the free market system take over and allow the utilities to seek out their own individual liability coverage, and allow the State tort laws to take over from the federally mandated legal provisions in Price-Anderson?

I think we all know the answer to that question, but I think we all have the same basic objectives in mind for today's hearing. We are here because we recognize the tremendous value of the Price-Anderson liability system, especially in terms of the assured compensation it affords for public damages arising from nuclear powerplant accidents. And we want to renew and improve upon this system, because it is by far the best system we have yet to devise for protecting the public from damages arising from low probability/high-consequence accidents.

We're just now beginning to appreciate how well the Price-Anderson system actually works. In the TMI-2 incident, the only incident so far that has involved offsite public liability claims as a result of a nuclear incident, the public had ready access to funds for evacuation and lost wages. Furthermore, the TMI-2 class action suits were processed efficiently and resulted in the establishment of a $20 million economic loss fund, and a $5 million public health fund for payment of all claims.

If only such a system had been in place for the victims of the Bophal tragedy, we might have seen those people adequately compensated in a reasonable period of time. If only the Superfund were structured as well as Price-Anderson, we would be proceeding with actual cleanup instead of waffling in an endless stream of lawsuits to determine who did what to whom, and who should pay the cleanup costs. I should add that the Superfund doesn't even have provisions, as of yet, to handle personal injury claims because we still can't figure out how to handle the cleanup bills.

It is really a shame that the lawsuits arising from asbestos injuries cannot funnel the payments more efficiently to the victims, rather than to the lawyers, who are so far the major beneficiaries of the asbestos claims. Their fees to date account for no less than two-thirds of all the money paid out so far in connection with asbestos litigation. I don't want that kind of situation to occur in the nuclear arena.

I think we all understand the shortcomings of normal tort law, and the deficiencies of other liability insurance schemes. I think we all recognize the subtleties in Price-Anderson that allow the nuclear liability insurance system to operate smoothly, drawing from the best features of tort law and enterprise liability, overcoming some of the conservatisms of the Federal Tort Claims Act, and yet operating within the confines of the Antideficiency Act.

So what we need to do at this time is to renew and fine tune that Price-Anderson structure that has already served us so well. I believe that S. 1225 can provide the kind of fine tuning that we are all looking for.

First, this bill would raise the liability limits to as much as $2.4 billion, four to five times the amount available under the present Price-Anderson Act. In the event that an accident occurred at a commercial nuclear power plant, the bill prescribes a three-tiered system for collecting the $2.4 billion sum via private insurance, retrospective premiums, and a fee on electricity from the nuclear plants.

In the event that an accident occurred in the course of activities undertaken by the Department of Energy contractors, the $2.4 billion would be immediately drawn from Federal revenues in advance of congressional appropriations.

Furthermore, if damages from an accident exceed the $2.4 billion sum, the President would be required to submit to the Congress a report containing one or more additional compensation plans tailored to the specific circumstances of the accident. Congress would then have to act on these plans within 60 days under expedited procedures.

Thus, unlike the present Price-Anderson statute, the provision in this bill for further congressional review and action has teeth and will assure the public that additional measures will be taken if the situation demands it, and it puts everyone on notice that there will be no holds barred on the sources of funds that might be used to provide for such additional compensation.

Also of significant importance to many people in this room and throughout this Nation, this bill would extend Price-Anderson coverage to include accidents at Federal Nuclear Waste Repositories, as well as accidents involving the transport of nuclear waste materials to such facilities. This clarification of Price-Anderson with respect to Federal nuclear waste activities is an issue we have never had to deal with in previous Price-Anderson renewals. But now with the imminent startup of the waste isolation pilot project in New Mexico, and with the ongoing consultation and concurrence activities between the Department of Energy and the potential high-level waste postrepository States, it is imperative that we clearly define in statutory language the Federal Government's responsibility to fully compensate the public for any accidents arising from Federal waste disposal activities.

Mr. Chairman, and members of the subcommittee, I look forward to this morning's hearing, and I'm anxious to participate in constructive dialog with all of the parties that have taken the time to appear before us. I am committed, as I'm sure all of you are, to renewing Price-Anderson legislation in a framework that is comprehensive, equitable, reliable, efficient, and in the best interests of the public and the Nation.

[The prepared statement of Senator McClure follows:]

OPENING STATEMENT FOR SENATOR McCLURE

Hearing on S. 1225: Price Anderson Act Amendments Act of 1985

June 25, 1985

I want to thank Senator Domenici for holding the hearing this morning on S. 1225, the bill that Senator Simpson and I have cosponsored, to renew and amend the Price-Anderson Act.

The original Price-Anderson Act was enacted almost thirty years ago when the nuclear power industry was in its infancy, and very little was known about the potential consequences of nuclear accidents. The Act was intended to serve two major purposes: (1) to eliminate the disincentives of unknown risk exposure, and thereby promote the commercial development of nuclear power, and (2) to provide a predictable and assured mechanism to compensate the public for losses in the event of a nuclear accident.

The Act has certainly met both of those objectives quite adequately, and with no burden on the taxpayers in doing so.

So at this juncture, one might wonder why we even need to renew the Price-Anderson Act at all? We now have 95 commercial nuclear power plants licensed to operate -- more than any other nation in the world. Isn't it time to let the free-market system take over -- and allow the utilities to seek out their own individual liability coverage, and allow the state tort laws to take over from the federally-mandated legal provisions in Price-Anderson?

I think we all know the answer to that question, and I think we all have the same basic objectives in mind for today's hearing. We are here because we recognize the tremendous value of the Price-Anderson liability system -- especially in terms of the assured compensation it affords for public damages arising from nuclear plant accidents. And we want to renew and improve upon this system, because it is by far the best system we have yet to devise for protecting the public from damages arising from low-probability, high-consequence accidents.

We are just now beginning to appreciate how well the Price-Anderson system actually works. In the TMI-2 incident -- the only incident so far that has involved offsite public-liability claims as a result of a nuclear incident -- the public had ready access to funds for evacuation and lost wages. Furthermore, the TMI-2 class action suits were processed efficiently and resulted in the establishment of a $20 million "Economic Loss Fund" and a $5 million "Public Health Fund" for payment of all claims.

If only such a system had been in place for the victims of the Bhopal tragedy, we might have seen those people adequately compensated in a reasonable period of time.

If only the Superfund were structured as well as Price-Anderson, we would be preceding with the actual cleanup, instead of waffling in an endless stream of lawsuits to determine who did what to whom, and who should pay the cleanup costs (I should add that Superfund doesn't even have provisions as of yet to handle personal injury claims -- because we still can't figure out how to handle the cleanup bills yet!).

And it is really a shame that the lawsuits arising from asbestos injuries can't be funnelling payments more efficiently to the victims, rather than to the lawyers, who so far are the major beneficiaries of the asbestos claims -- their fees to date account for no less than two-thirds of all the money paid out so far in connection with asbestos litigation.

I don't want that kind of situation to occur in the nuclear arena. I think we all understand the shortcomings of normal tort law, and the deficiences in other liability insurance schemes. I think we all recognize the subtleties in Price-Anderson that allow the nuclear liability insurance system to operate smoothly, drawing from the best features of tort law and enterprise liability; overcoming some of the conservatisms of the Federal Tort Claims Act; and yet operating within the confines of the Anti-Deficiency Act.

So what we need to do at this time is renew and fine-tune that Price-Anderson structure that has already served us so well. And I believe that S. 1225 can provide the kind of fine-tuning that we are all looking for.

First, this bill would raise the liability limits to as much as $2.4 billion -- four to five times the amount available under the present Price-Anderson Act. In the event that an accident occurred at a commercial nuclear power plant, the bill prescribes a three-tiered system for collecting the $2.4 billion sum, via private insurance, restrospective premiums, and a fee on electricity from the nuclear plants. In the event that an accident occurred in the course of activities undertaken by Department of Energy contractors, the $2.4 billion would be immediately drawn from federal revenues in advance of and not subject to further Congressional appropriations.

Furthermore, if damages from an accident exceeded the $2.4 billion sum, the President would be required to submit to

Congress a report containing one or more additional compensation plans tailored to the specific circumstances of the accident. Congress would then have to act on these plans within 60 days, under expedited procedures. Thus, unlike the present Price-Anderson statute, the provision in this bill for further Congressional review and action has teeth, and will assure the public that additional measures will be taken if the situation demands it. And it puts everyone on notice that there will be no holds barred on the sources of funds that might be used to provide for such additional compensation.

Also of significant importance to many people in this room and throughout this nation, this bill would extend Price-Anderson coverage to include accidents at federal nuclear waste repositories, as well as accidents involving the transport of nuclear waste materials to such facilities. This clarification of Price-Anderson with respect to federal nuclear waste activities is an issue we have never had to deal with in previous Price-Anderson renewals. But now, with the imminent startup of the Waste Isolation Pilot Plant in New Mexico, and with the ongoing consultation-and-concurrence activities between the Department of Energy and the potential high-level waste host repository states, it is imperative that we clearly define in statutory language the federal government's responsibility to fully compensate the public for any accidents arising from the federal waste disposal activities.

Mr. Chairman and members of the subcommittee, I look forward to this morning's hearing. I am anxious to participate in constructive dialogue with all the parties that have taken the time to appear before us. And I am committed, as I am sure all of you are, to renewing Price-Anderson legislation in a framework that is comprehensive, equitable, reliable, efficient, and in the best interest of the public and the nation.

The CHAIRMAN. I'll withhold my questions at this time to defer to others until they've had their first round. I would suggest that we limit our questions in the first round to 10 minutes from members.

Senator Evans.

Senator Metzenbaum.

Senator METZENBAUM. Thank you, Mr. Chairman.

In 1981, the GAO recommended that DOE assess the damages which could arise from an accident so we could get an idea of how high the liability limits should be. Let me ask you: Has the DOE completed any studies to assess the maximum amount of damage that could result from an accident at a DOE facility?

Mr. VAUGHAN. Mr. Chairman, we have reviewed the report. I will have to provide to you for the record whether we have done an explicit study or not. However, as you well know, the nature of this whole evolution is that it is very, very difficult, if not impossible, to estimate in advance the exact damage that might occur from an event which has never occurred and which is very hard to take a stab at in the dark.

Mr. Rusche.

Mr. RUSCHE. Senator, I'd like to add just the comment that, for the waste program, which obviously postdates the 1981 reference that you made, we have clearly an interest in trying to gain some estimates. And we have commissioned a study by Brookhaven National Laboratory, one of our contractors. Hopefully, we'll have some better feel for waste issues as distinct from reactor issues, per se.

The waste situation is fairly different because we don't have anything like stored energy. The range of parameters that must be considered is somewhat smaller. But it still is important for us to try to get an estimate, and we are working to that end.

Senator METZENBAUM. How soon, Mr. Rusche, do you think we might get some response on that?

Mr. RUSCHE. I don't know. I hope later on this year we'd have a better feel for it.

Senator METZENBAUM. Very good.

Mr. VAUGHAN, I appreciate your answer, and that you'll provide us with that which you have, but I'm not sure you've indicated that there really is a study being made, as suggested by the GAO. You've indicated the difficulty of doing it, and yet I am inclined to believe that it's possible to do, and if it isn't possible to do, then I think we are entitled to some explicit answer as to why not.

The GAO is an arm of the Congress, and I think that this instance speaks well for the Congress. I think the point to be made—and my guess is would be made if you were to come in with such a report—is that the potential liability is so great that the limits we're talking about in the McClure-Simpson—Wallop?

The CHAIRMAN. Two.

Senator METZENBAUM. Two, the McClure-Simpson bill, even though they're substantially increased, are not adequate for the exposure that could result.

Mr. VAUGHAN. Senator, first of all let me note that, as you will remember, the 1981 GAO Report covered a much broader range of subjects than just the question you have indicated. The Department has been responsive to the report. One of the key efforts that we have made and continue to make is to apply an ever-increasing effort to upgrade the safety as well as the protection of the environment to those Department of Energy nuclear activities.

I would also note in that regard that we are indeed professionally committed to assuring public health and safety. I've committed over 26 years of my professional life to doing that, and I do not believe that it is a conflict of interest in any way, as you indicated in your opening statement.

Senator **Metzenbaum**. I appreciate that, Mr. Vaughan, and I respect your thought on it, and I don't blame you, and I don't lay any responsibility at your doorstep for that which I consider to be a conflict of interest. I think it's a congressional responsibility.

Mr. **Vaughan**. Second, with respect again to estimating the cost of an accident, I think that what we're missing here is exactly the inherent principle of Price-Anderson that there is a readily available source of funds available for a quick, assured, and timely response—as Senator McClure has indicated in his comment—that is available up to a limit for what all of us believe is any conceivable event.

Now if the event that we can't conceive should occur, the mechanism still exists to deal with that subject, which is the congressional review for the event that none of us can estimate. It would be, however, unbalanced if you immediately made all that money available with the existing waiver of defenses and similar provisions that are inherent in the Price-Anderson Act. You would simply get the whole thing out of balance, as I commented in my opening statement.

Senator **Metzenbaum**. Mr. Vaughan, how do you figure that $2 billion is right? Before we had $500 million: you pick a $2 billion figure. If you can't assess the potential liability as the GAO recommended, how do you know it isn't $10 or $20 billion? That's all we're asking you for—your professional advice on that based upon studies.

We know—if the Three Mile incident had totally blown, or if any one of the others had gone, it seems to this Senator that the damages would have been so horrendous that that $2 billion would have been a drop in the bucket.

Mr. **Vaughan**. First of all, Senator, I would like to respectfully note that a nuclear power reactor cannot blow up like a bomb.

Senator **Metzenbaum**. I understand that. I understand that. And I wasn't suggesting that——

Mr. **Vaughan**. For the record. Just as I think it's worthy to note that——

Senator **Metzenbaum**. When I say "blown," I mean an accident which would cause the total evacuation of the community, and cause a significant radiation leak to occur.

Mr. **Vaughan**. Well, I think you're not giving credit to the safety features that are designed into the plant, and which in that case—which is the worst case we have ever had and approximates one of the worst we could imagine—that in fact the plant safety systems worked, and in fact they protected the health and safety not only of the public but of the workers in the plant.

Just as you referred a few minutes ago to the Davis-Besse event, I think for the record, before we forget it, we should note that no nuclear accident occurred at the Davis-Besse plant. In fact, again the plant protective systems worked, despite the fact that there were a number of deficiencies. And you may want to talk to others in more detail about that later in the hearing, but the fact of the matter is we've got a system both in the DOE and with the Nuclear Regulatory Commission in which we pay attention to deficiencies like this in our plants, and try to keep them corrected.

Senator **Metzenbaum**. Mr. Vaughan——

Mr. **Vaughan**. But none of us are perfect.

Senator **Metzenbaum** [continuing]. You keep talking about all the great safety work you're doing and the American public doesn't believe that. And the GAO said, projected property damage from a major nuclear accident at a commercial reactor ranges from a low of $10 million to a high of $100 billion. Further, if personal injuries are included, damages could be substantially higher.

You want to talk about what a great safety factor is there, and the American people and many Members of the Congress are not nearly that convinced that there is that much safety built into our nuclear facilities. In fact, we've had, I don't know how many instances in recent months of TV reports at night—and I can't evaluate them, but the reports are, this almost happened; this might have happened; and all I'm asking you for is what the GAO has asked you for. That is, for a report on the potential damage.

And you're saying $2 billion. I don't know if $2 billion is enough. This says maybe $100 billion. I'm asking you to do what the GAO has asked you to do.

Mr. **Vaughan**. And we will respond to that for the record for you, because I'd like to go back and check exactly what we did in response to the 1981 study.

Senator **Metzenbaum**. I'll appreciate that. Hopefully within maybe 60 days? Is that reasonable?

Mr. **Vaughan**. Yes. That's quite reasonable.

[The information follows:]

1981 GAO STUDY ON POTENTIAL DAMAGES FROM NUCLEAR INCIDENTS AT DOE FACILITIES

The Department has considered the recommendation made by the GAO in its 1981 report that DOE assess the potential damages resulting from nuclear incidents at its facilities. Establishing the potential damages and amount of money that would be necessary to satisfy claims immediately after a nuclear incident at any one of these facilities would require developing a complex model for each of the DOE facilities including not only reactors but the large number of other facilities involved in nuclear related activities. Each model would then have to be used to estimate the damages and the claims resulting from a specific incident and each model would have to be used to analyze each type of incident.

Estimating damages through modeling is a methodology that would require making a large number of uncertain assumptions about the type of incident which occurs and the complex chain of events it sets off. It would also require making assumptions about hundreds of variables such as atmospheric conditions, population density, operator response, emergency plans in place, population response, etc. Hundreds of scenarios would have to be developed and analyzed to establish a range for damages resulting from a nuclear incident. This approach would then have to be repeated for each nuclear facility. The Department believes that such an exercise would only lead to a very wide range of values for the damages resulting from a nuclear incident that would be of very little value in helping to establish a liability limit.

In addition, it is important to recognize that there is insufficient actuarial or statistical basis for associating dollar value with off-site radiation releases, especially of a low level nature. The assumptions used to arrive at an estimate of damages would be subject to conjecture.

In a September 1981 hearing before the House Science and Technology Subcommittee on Energy Research and Production, former Deputy Secretary W. Kenneth Davis addressed the GAO report in the following manner:

> "Well, there have been a whole series of studies, starting with the famous WASH-1400, or whatever it was, in the early days, trying to assess the possible damages as the result of various kinds of nuclear incidents. These have been followed by a whole series of what I think you'd have to describe as speculations. It all depends on your assumptions, how serious you think the occurrence might be, and what its probability is. The result is we have ended up over the years with enormous ranges of estimates of what the potential consequences might be, a very great degree of imprecision and wide ranges in individual studies, a great deal of discussion about the validity of the studies, and I would say that the odds on anybody being able to come up with a definitive figure are extremely remote. We simply don't have a methodology or a way of arriving at the figures nor the criteria by which one ought to pick the figure."

Very importantly, the Department believes that a process that satisfies claims by making a large fund available to satisfy the immediate needs of claimants in the case of an extraordinary nuclear occurrence is a reasonable and balanced approach. A fund containing $1 to $2.5 billion may be sufficiently large.

Senator METZENBAUM. If an accident occurs as a result of contractor negligence, why shouldn't that contractor be liable for damages?

Mr. VAUGHAN. I think we've already responded to that, and it is generic within the Department of Energy's system for its cost-reimbursable contractors operating at government-owned facilities, which is the typical case. And that is, if we took such an approach, the contractors would have to obtain insurance, and pass that on to the Government as a cost of doing business; and as I indicated earlier, history shows that it is much more cost-effective to assure that the contractors toe the line, assure safety, and effectively operate.

I would note to you that in the Department's way of doing business with these contractors, and most of the contracts are on an award-fee basis, that there are specific incentives in the contract to conduct a thorough and stringent health and safety program; and that if the contractor is found to be deficient and they need to improve, they get their fee docked. So there clearly is a financial incentive for them to carry out a strong safety program.

Senator METZENBAUM. Let me respond to that by quoting from a press release of my colleague from Ohio, Senator Glenn, and I will read it to you:

> Indeed, DOE's own task force report on the review of operations at the Fernald Plant released in June 1984 revealed that the NLO management had unacceptable attitudes towards health, safety, and environmental protection. The report also documented a number of deficiencies in maintenance, operator training, and supervision, and it indicated a lack of receptivity to new safety production technologies. These deficiencies, when coupled with the data available on past releases of radioactive materials, make it clear that the releases which took place late in 1984 were nothing less than an accident waiting to happen. Yet, despite these shortcomings, DOE still saw fit to rate NLO excellent or superior in overall performance. The rating was accompanied by an award of well over $1 million.

Now Senator Glenn is a pretty good authority in this area and has spent a lot of time studying it, and if he has arrived at the conclusion that your safety precautionary program isn't working that well, and instead of penalizing somebody or slapping them on the wrist, you give them a $1 million bonus, I think that we have reason to question DOE's activities and protection of the public.

I am advised my time is up, and I don't know if the chairman wants to give you time to respond, but on my time I can't permit you to do it. [Laughter.]

The CHAIRMAN. We will permit you to respond.

Mr. VAUGHAN. Well, I don't want to engage in a debate with you particularly on that point. That's one example. There are other examples on the other side of the fence. And since there is some pending litigation in the Fernald situation, I think I will not comment except to say that there is no indication that the public health and safety has in fact been harmed, despite the fact that corrective actions are needed and are underway.

I'm also sure you are aware that the contractor is being replaced at that activity.

Senator METZENBAUM. Thank you, Mr. Chairman.

The CHAIRMAN. Senator Evans.

Senator EVANS. Thank you, Mr. Chairman.

First, for Mr. Rusche, section 117 of the Nuclear Waste Policy Act provides that the Secretary must sign a written agreement with each affected State within 60 days of the decision on site characterization.

It's my understanding that the State of Washington has been involved for more than 2 years in negotiations for a C&C agreement. Negotiations have broken down, I understand, and no agreement has been consummated. It's my understanding that the negotiations have ultimately broken down on the issue of strict liability.

What's your view as to the reason that no agreement has been signed?

Mr. **Rusche**. Senator, my understanding is that there were two issues that led to setting the negotiations aside. One was on strict liability, or liability, and the Department took the position which you've heard me take already with respect to Price-Anderson coverage. The State took the position that it sought what it characterized as unlimited liability, for which we have no authority and believe is inappropriate under the circumstances.

The second issue was one that I think has probably been resolved with respect to the question on defense waste. I would note, however, that that consultation and cooperation [C&C] agreement is not the one you referred to under section 117, and that we have not selected the sites for characterization as yet. We and the State attempted to move ahead even in advance of that time because of our desire to work with them. The 60-day period, for example, has not started running and will not start running until sometime next year.

Senator **Evans**. I understand that, that we're trying to precede, and I commend the State for entering into those negotiations——

Mr. **Rusche**. We, too.

Senator **Evans** [continuing]. Early on, and I think that that's an appropriate way to go. And I'm disappointed, of course, that we haven't been able to conclude such an agreement.

I guess then, from what I heard you just say, they did not break down on the basis that you didn't think you had the authority to negotiate a strict liability provision. You just don't think it's necessary? Is that correct?

Mr. **Rusche**. No, on the contrary, we—I'm not sure just how you're using the terminology "strict liability." If you're using strict liability to mean "unlimited liability," we do not have authority.

Senator **Evans**. And in that case you don't think that it ought to be unlimited liability?

Mr. **Rusche**. I do not.

Senator **Evans**. Well, the opposite of unlimited liability is limited liability. If you have limited liability and you go beyond those limits, who takes care of the rest?

Mr. **Rusche**. Well, Senator, as we said, and I think that most of us are aware, the Congress is in effect the final body in the United States who makes that choice. Even under Price-Anderson at the moment, if in fact the limits that exist, whether they're the present ones or the ones under S. 1225, or some other set, I hope that the Congress would reserve for itself the opportunity and the obligation to look at liability in excess of that amount previously arranged for, which is primarily for the purpose of rapid, and fair, and equitable compensation in the circumstances in which an event occurs.

I understand the new——

Senator EVANS. Rapid, fair, and equitable, or possibly no compensation.

Mr. RUSCHE. Yes, but that's not related to the limit at all. Whether it's compensation or not depends on the criteria that we compensate under, and that's not related to the limit.

Senator EVANS. You're really talking about when you go beyond limits, whether—you know, it seems to me that that's cold comfort for any State about to be designated as a site for high-level nuclear waste, and that's for a fairly long period of time I understand.

Mr. RUSCHE. Yes, sir.

Senator EVANS. Beyond any of our ken. It's cold comfort to say, well, if there is an accident of a nature that goes beyond limits that are established under Price-Anderson, then you'll come to Congress and Congress will undoubtedly take care of you.

Mr. RUSCHE. Does not the State put its faith in the Congress to start with by whatever limit you make pick? Or if the resources of the program are not equal to the magnitude of the potential claim, the State puts its faith in the Congress to respond—to make a responsible judgment? It seems to me that's the place where the State and all of us put our final judgment, and I think that's where 1225——

Senator EVANS. No, I think we're talking about a whole different circumstances now than what we've been dealing with up to now, individual accidents at individual sites. We're talking about collecting all of it and designating a permanent long-term storage that has vastly different consequences than anything we've talked about up to now.

You don't believe that there ought to be greater assurances than just come to Congress for any accident that might occur?

Mr. RUSCHE. Oh, indeed I do. In fact, I believe the provisions of Price-Anderson as now exist or as may be modified should apply to provide some immediate compensation capability. I think that, although I'm not at the moment able to give you the quantitative estimates, that we will be able to make clear to all of us that the potential for accidents in a waste repository are nothing like the potential for accidents in an operating reactor. We just do not have the kind of stored energy and the potential for dispersal on a time scale that is common to the other facilities.

Senator EVANS. Well, if that's the case and there's no problem, why don't we just state up front in an act and give comfort to those States that we will indeed take on the liability, if we are so assured that it's a very small liability and a very small chance? What matter is it to us to do it, then?

Mr. RUSCHE. As I indicated earlier, I don't think we're in a position to make an absolute definitive statement of limitation. We're dealing with circumstances in the waste program that we've never dealt with as Americans, over periods of time that are very long. I think it would be unwise to say that whatever occurs, whenever it occurs, before the fact has been judged to be compensatable without the benefit of the judgment of the circumstances then in existence.

I think the several-tiered approach that is being considered here certainly makes great sense. I think the States and all Americans are due compensation for damages produced by the program. And it seems to me what we have before us is an opportunity to put that very thing in place. I think we have it in place already under the present Price-Anderson provisions, but I think that the course that we've outlined would provide greater assurance by making minor modifications.

Senator EVANS. We will hear later from a representative from the State of Washington, but I understand in his statement that he says no consultation and cooperation agreement between DOE and a State as provided by NWPA will ever be consummated without strict liability requirements. Do you agree?

Mr. RUSCHE. I can't speak for the State of Washington, sir.

Senator EVANS. Well, you probably can't speak for any of the States, but do you believe that any State is likely to sign a consultation and cooperation agreement without those requirements?

Mr. RUSCHE. I can't really answer that. I've had several people, attorneys general for example, make comments to that effect. I think if it were the will of the country, expressed by the Congress, that the situation be different, obviously we would conduct ourselves in that way. My personal view is that the State ought to sign, if that is the only factor that remains; that the kind of provisions that are presently available, and certainly those that would be provided by the kinds of modifications envisioned in these pieces of legislation, I think provide an entirely adequate and fair and equitable basis, and therefore should lead the States to sign, if that's the only factor remaining.

Senator EVANS. Well, perhaps that will happen, but it doesn't——

Mr. RUSCHE. It doesn't so appear.

Senator EVANS [continuing]. But we will hear a little later from at least one of the States, and I don't see anyone rushing to the bargaining table at the moment to sign an agreement, particularly from Nevada, Texas, or Washington, which are three of the States that have the concern.

Mr. RUSCHE. Well, none of the other States have been as eager even as your State has to even discuss the issue. We do not have formal negotiations underway with any of the other States. Some of the Indian tribes have indicated a desire to try to proceed, and we are presently engaged in discussions with them.

Senator EVANS. If the State that has attempted says that it will never happen without some more explicit and strict liability legislation and the other States have not even begun to negotiate, and if we end up with no C&C agreements signed with any of the States, do you believe the statutory requirements of the act are being fulfilled?

Mr. RUSCHE. Well, the answer is yes. I think that if they're not fulfilled within 6 months after we have selected the sites, then we'll bring a report to you and perhaps you can provide additional advice to us and/or the States as to how we should proceed.

I can assure you and the States that we will negotiate with the best of our ability, earnestly seeking an agreement. But if that turns out to be the basis for a nonagreement, then we are obligated to let you know, and I think that that will satisfy the statutory obligation.

Senator EVANS. [illegible] report [illegible] you couldn't reach an agreement?

Mr. [illegible]. Yes, sir. I believe that is what the letter requires. I'll be disappointed if that is the case. I hope everything—and I think I have a friend in the States somewhere. I have one in [illegible]—

Senator EVANS. Well, I suspect we'll be disappointed. [illegible] that doesn't occur. But it would defer until later in the day when we hear from the States.

Mr. [illegible]. I have [illegible] about what you'll hear.

Senator EVANS. I have no doubts either. [illegible]

I understand my time has run out. Mr. Chairman.

The CHAIRMAN. Senator Bingaman.

Senator BINGAMAN. Thank you, Mr. Chairman. Let me ask [illegible] Mr. Vaughan. You [illegible] indicated in your testimony your objection to establishing unlimited liability, and I understand that. What is your thought with regard to the suggestion that we should be extending the statute of limitations from 20 to 30 years? Is that something in your view would also be unreasonable?

Mr. VAUGHAN. I think that the 20-year number that has been suggested [illegible] is an appropriate number. I am not saying that 30 years is an unreasonable number compared to 20. I think I am saying that there are some limits on the statute of limitations. It would create unnecessary exposure [illegible] situation where [illegible] commented, there are already [illegible] provisions for immediate [illegible] and assured payments under Price-Anderson. [illegible] I think there are reasons why you [illegible] statute of limitations indefinitely [illegible] unlimited liability.

Senator BINGAMAN. Let me ask [illegible] about the WIPP project. Is it your understanding that the Price-Anderson [illegible] currently [illegible] the WIPP project? Is that accurate?

Mr. VAUGHAN. That is accurate. [illegible] Price-Anderson [illegible] Department [illegible] individual contracts [illegible] Price-Anderson indemnification. [illegible] determination [illegible] contract for the WIPP project.

Senator BINGAMAN. Is there any reason why we should [illegible] in the statute that WIPP is covered [illegible] statute? [illegible] the event [illegible] future administration would determine that [illegible] covered?

Mr. VAUGHAN. We believe it is unnecessary, Mr. Bingaman. [illegible] statute [illegible] indicates [illegible] WIPP [illegible] would be covered. [illegible] separately commented [illegible] Committee [illegible] WIPP [illegible].

Senator BINGAMAN. Would it be your thought that coverage should be extended to the transportation of [illegible] waste under Price-Anderson? [illegible] is it your thought that that is included? The WIPP project [illegible] waste [illegible] understand [illegible] waste [illegible] environment [illegible].

Mr. Rusche you seem to be indicating you don't agree with that. Do you have different information?

Mr. RUSCHE. Sir, I'm sorry. I didn't mean to be giving such a visible signal. [Laughter.]

Senator BINGAMAN. Do you disagree that that high-level waste will be there in small quantities on an experimental temporary basis?

Mr. RUSCHE. No, I don't disagree with that. I don't know how much, and when, but there is none there now.

Senator BINGAMAN. Right. Right. But is it either of your thoughts that Price-Anderson should cover the transportation of low-level waste to a repository like WIPP?

Ms. KUZNICK. If I could answer that question, Mr. Bingaman, the way the DOE system works, it's a little bit different than how the NRC system works. When we cover a facility, it includes our low-level waste facilities, which are on the same site as our nuclear reactors. And so transportation of low-level waste to and from our facilities would be covered.

Now as I understand it, the Nuclear Regulatory Commission has never extended Price-Anderson coverage to low-level waste sites that are operated by commercial entities. So I believe if it was transportation from an NRC-licensed reactor to a low-level waste site, that would be included in the coverage for that commercial reactor; but that the low-level waste facility itself would be covered by the nuclear insurance pools, and that would be private insurance that would be available; but that wouldn't come under the Price-Anderson system as such.

Senator BINGAMAN. Does it make sense for us to be leaving these fine distinctions you just described to the discretion of the administrators involved? Shouldn't we provide by statute that the transportation of low-level waste to any DOE facility is covered?

Mr. VAUGHAN. As Ms. Kuznick commented, it is covered to DOE facilities. I would note that I think that it is somewhat an academic question, because it is hard for me to conceive technically, due to the very nature and requirements for low-level waste, that that could result in an extraordinary nuclear occurrence which triggers immediate payment under Price-Anderson. So I believe we're dealing with an academic question.

Senator BINGAMAN. Well, we may be dealing with an academic question, but we also may be dealing with some real perceptions. And I'm very concerned. I guess your testimony is that at the present time the transportation of any waste to the WIPP site that's contemplated for the future whether it be high-level, transuranic, low-level, would be covered by Price-Anderson?

Mr. VAUGHAN. That is correct.

Senator BINGAMAN. And the Secretary of Energy does not have discretion to change that? That is the way the law reads today, and that is not something that we need to clarify in te law?

Mr. VAUGHAN. I don't think you need to clarify it in the law. At one point, one could argue that discretion did exist, but the Department of Energy has made that determination in accordance with its normal responsibilities to include Price-Anderson coverage in its contract.

Senator **Bingaman**. And in your view, that discretion is not revocable? I mean, once the decision is made, the next Secretary of Energy can't change his mind?

Mr. **Vaughan**. The Secretary of Energy doesn't normally willy-nilly cancel contracts. It's made with purpose, and it is a part of the contractual provisions.

Senator **Bingaman**. I understand the "normal" thing. I'm just trying to find out if there's a reason why we can't specify that this is the law, if it's your view that this is the law.

Mr. **Vaughan**. I just think it is an unnecessary degree of specificity, Mr. Bingaman. It would set a precedent that we would then need to enumerate and specify explicitly other activities, and it seems to me that Congress is normally in the function of passing legislation indicating its will, and then enable the individual departments to carry it out in a responsible manner, which is what I think we've done here.

Senator **Bingaman**. And you believe that the statute does provide that there is Price-Anderson coverage for the transportation of low-level waste as well as transuranic and high-level waste to any DOE facility at the present time?

Ms. **Kuznick**. To any DOE facility that's covered by Price-Anderson, yes, and WIPP is covered presently by Price-Anderson.

Senator **Bingaman**. You say it's covered presently? Could you explain "presently"?

Ms. **Kuznick**. Well, we have the statutory indemnity article in our contract with Westinghouse, who's the technical support contractor for WIPP.

Senator **Bingaman**. But is there a reason why—I mean, you still have the discretion to write a new contract and leave that out, do you not?

Ms. **Kuznick**. The authority in Price-Anderson for the Secretary or for a contracting officer to include Price-Anderson coverage is discretionary. But we have exercised that in our procurement regulations, so that if there's a finding of a certain dollar amount of maximum conceivable damage, that we will include Price-Anderson coverage in that contract.

Senator **Bingaman**. Do you have regulations that specify that that is the way you administer it, and that that provision will be included?

Mr. **Vaughan**. Yes, sir, we do.

Senator **Bingaman**. Perhaps you could get me the numbers of those regulations, so I could just refer to them.

Ms. **Kuznick**. They're the DOE procurement regulations, but I'll get you, for the record, I'll get you the specific sections. I don't have them right now.

[The information follows:]

48 CFR § 950.7004 provides that "If, pursuant to 950.7005, a Head of a Contracting Activity determines that the maximum conceivable damage which could result from a nuclear incident arising in the course of a contractor's activities falls between $1 million and $60 million, they shall submit the proposed indemnification with a recommendation, and all supporting data, to the Head of the Agency, or designee, for appropriate action."

PART 950

EXTRAORDINARY CONTRACTUAL ACTIONS

Subpart 950.1—General

950.104 Reports.

The information required by FAR 50.104(b) for all actions taken under the extraordinary emergency authority shall be submitted to the Director, Contract Business Clearance Division, Headquarters no later than 30 days after the date of completion of processing the action. In the event no actions were taken under Pub L. 85-804 during the preceding calendar year, a negative report should be submitted to the Director, Contract Business Clearance Division, Headquarters no later than January 20 of each year.

Subpart 950.70—Indemnification of DOE Contractors

950.7000 Scope of subpart.

This subpart describes the established policies concerning (a) indemnification of DOE contractors against public liability for a nuclear incident arising out of or in connection with the contract activity, and (b) indemnification of DOE contractors against liability for nonnuclear risks arising out of or in connection with the contract activity.

950.7001 Applicability.

(a) With respect to indemnification against public liability for a nuclear incident, the pertinent policies and procedures set forth in this subpart shall be applicable in entering into indemnity agreements with:

(1) DOE contractors engaged in the operation of prodcution or utilization facilities; and

(2) DOE contractors whose work entails the risk of public liability for a substantial nuclear incident.

(b) With respect to indemnification against liability for nonnuclear risks, the pertinent policies and procedures set forth in this subpart shall be applicable in entering into indemnity agreements with any DOE contractors.

950.7002 Definitions.

"DOE contractor" means any DOE prime contractor, including any agency of the Federal Government with which DOE has entered into an interagency agreement.

"Construction contractor" means a DOE contractor who is constructing an installation for DOE which, when completed, will be a production or utilization facility.

"Nuclear incident" means:

(1) Any occurrence within the United States causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or by-product material; and

(2) Any such occurrence outside the United States, if such occurrence involves a facility or device owned by, and used by or under contract with, the United States.

"Person indemnified" means:

(1) With respect to a nuclear incident occurring within the United States, the person with whom an indemnity agreement is executed and any other person who may be liable for public liability; or

(2) With respect to any nuclear incident occurring outside the United States, the person with whom an indemnity agreement is executed and any other person who may be liable for public liability by reason of activities under any contract with DOE or any project to which indemnification under the provisions of section 170d of the Atomic Energy Act 1954, as amended, has been extended, or under any subcontract, purchase order, or other agreement, of any tier, under any such contract or project.

(3) With respect to a nonnuclear incident the person with whom an indemnity agreement is executed.

"Nuclear reactor" means an apparatus, other than an atomic weapon, designed or used to sustain nuclear fission in a self-supporting chain reaction.

"Production facility" means:

(1) Any nuclear reactor designed or used primarily for the formation of plutonium or uranium 233; or

(2) Any facility designed or used for the separation of the isotopes of uranium or the isotopes of plutonium, except laboratory scale facilities designed or used for experimental or analytical purposes only, or

(3) Any facility designed or used for the processing of irradiated materials containing special nuclear material, except laboratory scale facilities designed or used for experimental or analytical purposes only.

"Public liability" means any legal liability (including liability for loss of, or damage to, or loss of use of property which is located at the site of and used in connection with the contract activity arising out of or resulting from a nuclear incident) except. (1) Claims under State or Federal workmen's compensation acts of employees of persons indemnified, who are employed at the site of and in connection with the activity where the nuclear incident occurs, and (2) claims arising out of an act of war. "Public liability" also includes damage to property of persons indemnified, provided that such property is covered under the terms of any financial protection that may be required, except property which is located at the site of and used in connection with the activity where the nuclear incident occurs.

"Utilization facility" means any nuclear reactor other than one designed or used primarily for the formation of plutonium or U 233.

950.7003 Statutory indemnity.

Section 170d of the Atomic Energy Act of 1954, as amended, authorized DOE "to enter into agreements of indemnification with its contractors for the construction or operation of production or utilization facilities or other activities under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident." Contractors identified in 950.7001(a) are eligible for such statutory indemnity.

950.7004 Authority to negotiate statutory indemnity agreements.

(a) Heads of Contracting Activities are authorized to negotiate statutory indemnity agreements with contractors identified in 950.7001(a)(1).

(b) Pursuant to 950.7005, Heads of Contracting Activities may enter into a statutory indemnity agreement whenever it has been determined that a contractor in 950.7001(a)(2) is engaged in activities involving the risk of public liability for a substantial nuclear incident. Such a determination may be based upon either the risk of liability for the occurrence of a substantial nuclear incident in the course of performance of the contract work, or the risk of liability for a substantial nuclear incident caused by a product delivered to or for the DOE under the contract where such product is expected to be used in connection with a facility or device not covered by a statutory indemnity agreement. If, pursuant to 950.7005, a Head of a Contracting Activity determines that the maximum conceivable damage which could result from a nuclear incident arising in the course of a contractor's activities falls between $1 million and $60 million, they shall submit the proposed indemnification with a recommendation, and all supporting data, to the Head of the Agency, or designee, for appropriate action.

950.7005 Substantial nuclear incident.

(a) With respect to 950.7001(a)(2), and pursuant to the provisions of 950.7004, a Head of a Contracting Activity may be required to determine whether a contractor's activities involve the risk of public liability for a substantial nuclear incident and thus make the contractor eligible to obtain a statutory indemnity agreement from the DOE. The determination by a Head of a Contracting Activity shall be based on the criteria in paragraph (b) below.

(b) If, after a study of the maximum conceivable damage which can result from an incident arising out of or in connection with the contractor's activities, the Head of a Contracting Activity concludes that the maximum conceivable damage per incident to property and persons is $60 million or more, the contractor may be found to be under a risk of public liability for a substantial nuclear incident and the Head of the Contracting Activity is authorized to execute a statutory indemnity agreement under such a contract. If such a study of the maximum conceivable damage indicates a figure of $1 million or less, the contractor should not be considered to have a risk of public liability for a substantial nuclear incident, and therefore, shall not be made a party to a statutory indemnity agreement. If the study indicates that the maximum conceivable damage falls between $1 million and $60 million, the Head of a Contracting Activity will submit the proposed indemnification of such contractor to the Head of the Agency or designee with a recommendation and all supporting data.

(c) The Head of the Agency or designee may take one of the following actions:

(1) Determine that the contractor is under risk of public liability for a substantial nuclear incident and that the contractor should be extended a statutory indemnity agreement; or

(2) Determine that the contractor should not be extended a statutory indemnity.

(d) When statutory indemnity is not extended, the Head of the Agency or designee may authorize the Head of a Contracting Activity to authorize the contractor to purchase nuclear liability insurance or to offer the contractor a general authority indemnity agreement.

950.7006 Statutory indemnity contract article.

The contract clause contained in 952.250-70 shall be incorporated in all contracts in which a statutory indemnity agreement is to be included upon a determination that the contractor is under risk of public liability for the occurrence of a substantial nuclear incident in the course of performance of the contract work. The contract clause contained in 952.250-71 shall be incorporated in all contracts in which a statutory indemnity agreement is to be included upon a determination that the contractor is under risk of public liability only for a substantial nuclear incident caused by a product delivered to or for the DOE, under the contract where such product is expected to be used in connection with a facility or device not covered by a statutory indemnity agreement.

Head of the Agency or designee for review and decision, all pertinent information concerning the need for, or desirability of, providing a general authority indemnity to a DOE contractor.

(e) Where the indemnified risk is nonnuclear, the amount of general authority indemnity extended to a fixed-price contractor should normally have a maximum obligation equivalent to the amount of insurance that the contractor usually carries to cover such risks in its other commerical operations or, if the risk involved is dissimilar to those normally encountered by the contractor, the amount that it otherwise would have reasonably procured to insure this contract risk.

(f) In the event that a DOE contractor has been extended both a statutory indemnity and a general authority indemnity, the general authority indemnity will not apply to the extent that the statutory indemnity applies.

(g) The provisons of this subsection do not restrict or affect the policy of DOE to pay its cost-reimbursement type contractors for the allowable cost of losses and expenses incurred in the performance of the contact work, within the maximum amount of the contract obligation.

952.250 Clauses related to indemnification of contractors.

952.250-70 Nuclear hazards indemnity.

In accordance with the provisions prescribed in Subpart 950.70 include the following clause in applicable contracts

Nuclear Hazards Indemnity (Apr 1984)

(a) This clause is incorporated into this contract pursuant to the authority contained in subsection 170(d) of the Atomic Energy Act of 1954, as amended (hereinafter called the Act.)

(1) The definitions set out in the Act shall apply to this article

(2) The term "contract location" means any DOE facility, installation, or site at which contractual activity under this contract is being carried on and any contractor-owned or controlled facility, installation or site at which the contractor is engaged in the performance of contractual activity under this contract

(3) The term "extraordinary nuclear occurrence" means an event which DOE has determined to be an extraordinary nuclear occurrence as defined in the Act. A determination of whether or not there has been an extraordinary nuclear occurrence will be made in accordance with the procedures in Subpart E of 10 CFR 140

(b) Except as hereafter permitted or required in writing by DOE, the contractor will not be required or provide or maintain, and will not provide or maintain at Government expense, any form of financial protection to cover public liability. DOE may at any time require in writing that the contractor provide and maintain financial protection of such a type and in such amount as DOE shall determine to be appropriate to cover public liability, arising out of or in connection with the contractual activity, provided that the costs of such financial protection will be reimbursed to the contractor by DOE

(c)(1) To the extent that the contractor and other persons indemnified are not compensated by any financial protection, permitted or required by DOE or the Nuclear Regulatory Commission (NRC), DOE will indemnify the contractor and other persons indemnified against (i) claims for public liability as described in subparagraph (2) of this paragraph (c), and (ii) the reasonable cost of investigating and settling claims and defending suits for damage for such public liability, provided that DOE's liability, excluding such reasonable costs, under all indemnity agreements entered into by DOE under section 170 of the Act, including this contract, shall not exceed $500 million in the aggregate for each nuclear incident occurring within the United States or $100 million in the aggregate for each nuclear incident occurring outside the United States, irrespective of the number of persons indemnified in connection with this contract.

(2) The public liability referred to in paragraph (c)(1) of this section is public liability which (i) arises out of or in connection with the contractual activity, and (ii) arises out of results from:

(A) A nuclear incident which takes place at a contract location; or

(B) A nuclear incident which takes place at any other location and arises out of or in the course of the performance of contractual activity under this contract by the contractor's employees, individual consultants, borrowed personnel or other persons for the consequence of whose acts or omissions the contractor is liable, provided that such incident is not covered by any other indemnity agreement entered into by DOE or the NRC pursuant to section 170 of the Act: or

(C) A nuclear incident which arises out of or in the course of transportation of source, special nuclear, or by-product materials to or from a contract location, provided such incident is not covered by any indemnity agreement entered into by DOE with the transporting carrier, or with a carrier's organization acting for the benefit of the transporting carrier, or with a licensee of NRC, pursuant to section 170 of the Act, or

(D) A nuclear incident which involves items (such as equipment, material, facilities, or design or other data) produced or delivered under this contract, provided such incident is not covered by any other indemnity agreement entered into by DOE or NRC pursuant to section 170 of the Act

(d) In the event of an extraordinary nuclear occurrence which:

(1) Arises out of or results from or occurs in the course of the construction, possesson, or operation of a production or utilization facility, or

(2) Arises out of or results from or occurs in the course of transportation of source material, by-product material, or special nuclear material to or from a production or utilization faclility, or

(3) During the course of the contract activity, arises out of or results from the possession, operation, or use by the contractor or a subcontractor of a device utilizing special nuclear material or by-product material. DOE and the contractor on behalf of itself and other persons indemnified, insofar as their interests appear, each agrees to waive

(i) Any issue or defense as to the conduct of the claimant or fault of persons indemnified, including, but not limited to

(A) Negligence,

(B) Contributory negligence,

(C) Assumption of risk, or

(D) Unforeseeable intervening causes, whether involving the conduct of a third person or an act of God

As used herein, "conduct of the claimant" includes conduct of persons through whom the claimant derives its cause of action,

(ii) Any issue or defense as to charitable or governmental immunity,

(iii) Any issue or defense based on any statute of limitations, if suit is instituted within 3 years from the date on which the claimant first knew, or reasonably could have know, of his injury or change and the cause thereof, but in no event more than 20 years after the date of the nuclear incident. The waiver of any such issue or defense shall be effective regardless of whether such issue or defense may otherwise be deemed jurisdictional or relating to an element in the cause of action. The waiver shall be judicially enforceable in accordance with its terms by the claimant against the person indemnified.

(e) The waivers set forth in paragraph (d) of this clause

(1) Shall not preclude a defense based upon a failure to take reasonable steps to mitigate damages;

(2) Shall not apply to injury or damage to a claimant or to a claimant's property which is intentionally sustained by the claimant or which results from a nuclear incident intentionally and wrongfully caused by the claimant;

(3) Shall not apply to injury to a claimant who is employed at the site of and in connection with the activity where the extraordinary nuclear occurrence takes place, if benefits therefore are either payable or required to be provided under any workmen's compensation or occupational disease law;

(4) Shall not apply to any claim for punitive or exemplary damages, provided, with respect to any claim for wrongful death under any State law which provides for damages only punitive in nature, this exclusion does not apply to the extent that the claimant has sustained actual damages, measured by the pecuniary injuries resulting from such death but not to exceed the maximum amount otherwise recoverable under such law;

(5) Shall not apply to any claim resulting from a nuclear incident occurring outside the United States;

(6) Shall be effective only with respect to those obligations set forth in this agreement and in insurance policies, contracts or other proof of financial protection; and

(7) Shall not apply to, or prejudice the prosecution or defense of, any claim or portion of claim which is not within the protection afforded under (i) the limit of liability provisions under subsection 170e of the Atomic Energy Act of 1954, as amended, and (ii) the terms of this agreement and the terms of insurance policies, contracts, or other proof of financial protection.

(f) The contractor shall give immediate written notice to DOE of any known action or claim filed or made against the contractor or other person indemnified for public liability as defined in paragraph (c)(2). Except as otherwise directed by DOE, the contractor shall furnish promptly to DOE, copies of all pertinent papers received by the contractor or filed with respect to such actions or claims. When DOE shall determine that the Government will probably be required to make indemnity payments under the provisions of (c) above, DOE shall have the right to, and shall collaborate with, the contractor and any other person indemnified in the settlement or defense of any action or claim and shall have the right (1) to require the prior approval of DOE for the payment of any claim that DOE may be required to indemnify hereunder, and (2) to appear through the Attorney General on behalf of the contractor or other person indemnified in any action brought upon any claim that DOE may be required to indemnify hereunder, take charge of such action, and settle or defend any such action. If the settlement or defense of any such action or claim is undertaken by DOE, the contractor or other person indemnified shall furnish all reasonable assistance in effecting a settlement or asserting a defense.

(g) The indemnity provided by this clause shall not apply to public liability arising out of, or in connection with, any activity that is performed at a licensed facility, and that is covered by a Nuclear Regulatory Commission indemnity agreement authorized by section 170 of the Act.

(h) The obligations of DOE under this clause shall not be affected by any failure on the part of the contractor to fulfill its obligation under this contract and shall be unaffected by the death, disability, or termination of existence of the contractor, or by the completion, termination or expiration of this contract.

(i) The parties to this contract enter into this clause upon the condition that this clause may be amended at any time by the mutual written agreement of DOE and the contractor, and that such amendment may, by its express terms, provide that it will apply to any nuclear incidents which occur thereafter.

(j) The provisions of this clause shall not be limited in any way by, and shall be interpreted without reference to, any other clause of this contract, including the Disputes clause provided, however, that the following provisions of the contract: Clause entitled, Covenant Against Contingent Fees, the clause entitled, Officials Not to Benefit, and the clause entitled, Examination of Records by Comptroller General, and any provisions later added to this contract which under applicable Federal law, including statutes, executive orders and regulations, are required to be included in agreements of the type contained in this article, shall apply to this clause.

Alternate I: The following paragraph will be included in for those contracts containing the indemnity clause executed under the general contract authority of DOE.

(k) To the extent that the Contractor is compensated by any financial protection, or is indemnified pursuant to this clause or is effectively relieved of public liability by an order or orders limiting same, pursuant to section 170e of the Atomic Energy of 1954, as amended, the provisions of clause providing General Authority Indemnity, shall not apply.

952.250-71 Nuclear hazards indemnity—product liability.

Include the following clause as prescribed by the provisions of Subpart 950.70.

Nuclear Hazards Indemnity—Product Liability (Apr 1984)

(a) This clause is incorporated into this contract pursuant to the authority contained in section 170d of the Atomic Energy Act of 1954, as amended (hereinafter called the Act).

(1) The definitions set out in the Act shall apply to this article.

(2) The term "product delivered under the contract" means any material, equipment, device, drawing, specification, or technical data made, prepared, or acquired by the contractor in the course of performance of the contract and delivered to DOE or to any other persons as directed or approved by DOE.

(b) Except as hereafter permitted or required in writing by DOE, the contractor will not be required to provide or maintain, and will not provide or maintain at Government expense, any form of financial protection to cover public liability. DOE may at any time require in writing that the contractor provide and maintain financial protection of such a type and in such amount as DOE shall determine to be appropriate to cover public liability against which the contractor is indemnified hereunder, provided that the costs of such financial protection will be reimbursed to the contractor by DOE.

(c)(1) To the extent that the contractor and other persons indemnified are not compensated by any financial protection permitted or required by DOE or the Nuclear Regulatory Commission, (NRC), DOE will indemnify the contractor, and other persons indemnified, against (i) claims for public liability as described in subparagraph (2) of this paragraph (c), and (ii) the reasonable costs of investigating and settling claims, and defending suits for damages for such public liability, provided that DOE's liability, excluding such reasonable costs, under all indemnity agreements entered into by DOE under section 170 of the Act, including this contract, shall not exceed $500 million in the aggregate for each nuclear incident occurring within the United States or $100 million in the aggregate for each nuclear incident occurring outside the United States, irrespective of the number of persons indemnified in connection with this contract.

(2) The public liability referred to in subparagraph (1) of this section is public liability which (i) arises out of, or in connection with, the contractual activity, and (ii) arises out of, or results from, a product delivered under the contract, but does not include liability for a nuclear incident which is covered by any other indemnity agreement entered into by DOE or NRC pursuant to section 170 of the Act.

(d) The contractor shall give immediate written notice to DOE of any known action or claim filed or made against the contractor or other person indemnified for public liability as defined in paragraph (c)(2). Except as otherwise directed by DOE, the contractor shall furnish promptly to DOE copies of all pertinent papers received by the contractor or filed with respect to such actions of claims. When DOE shall determine that the Government will probably be required to make indemnity payments under the provisions or (c) above, DOE shall have the right to, and shall collaborate with, the contractor and any other person indemnified in the settlement or defense of any action or claim and shall have the right, (1) to require the prior approval of DOE for payment of any claim that DOE may be required to indemnify hereunder, and (2) to appear through the Attorney General on behalf of the contractor or other person indemnified in any action brought upon any claim that DOE may be required to indemnify hereunder, take charge of such action, and settle or defend any such action. If the settlement or defense of any such action or claim is undertaken by DOE, the contractor or other person indemnified shall furnish all reasonable assistance in effecting a settlement or asserting a defense.

(e) The obligations of DOE under this clause shall not be affected by any failure on the part of the contractor to fulfill its obligations under this contract, and shall be unaffected by the death, disability, or termination of existence of the contractor or by the completion, termination, or expiration of this contract.

(f) The parties to this contract enter into this article upon the condition that this clause may be amended at any time by the mutual written agreement of DOE and the contractor and that such amendment may, by its express terms, provide that it will apply to any nuclear incidents which occur thereafter.

(g) The provisions of this clause shall not be limited in any way by, and shall be interpreted without reference to, any other clause of this contract, including the Disputes clause, provided, however, that the following provisions of the contract: Clause entitled, Convenant Against Contingent Fees, Clause entitled, Officials Not to Benefit, Clause entitled, Assignment of Claims, and Clause entitled, Examination of Records by Comptroller General, and any provisions later added to this contract which, under applicable Federal law, inlcuding statutes, executive orders, and regulations, are required to be included in agreements of this type contained in this clause, shall apply to this clause.

Alternate I. The following section will be added for in those contracts containing indemnity agreements executed under the general contract authority of DOE:

(h) To the extent that the contractor is compensated by any financial protection, or is indemnified pursuant to this clause, or is effectively relieved of public liability by an order or orders limiting same pursuant to section 170e of the Atomic Energy Act of 1954, as amended, the provisions of clause providing General Authority Indemnity, shall not apply.

952.250-72 Indemnity assurance to architect-engineer or supplier prior to operation of a production or utilization facility.

Include the following clause in accordance with the provisions of Subpart 950.70.

Indemnity Assurance to Architect-Engineer or Supplier Prior to Operation of a Production or Utilization Facility (Apr 1984)

(a)(1) The definitions set out in the Atomic Energy Act of 1954, as amended (hereinafter called the Act), shall apply to this clause.

(2) The services or supplies furnished under this agreement are intended to be used in connection with the construction and/or operation of a production or utilization facility.

(3) DOE will use its best efforts to include in any contract for the operation of such facility, an agreement based on the then current approved form of indemnity agreement under section 170d of the Atomic Energy Act of 1954, as amended, whereby DOE will indemnify all persons indemnified, including the contractor, against public liability for nuclear incidents arising out of or in connection with contractual activities under the contract for the operation of said facility in accordance with the authority provided in subsection 170d of the Act.

(4)(i) DOE will enter into an indemnity agreement in accordance with the authority provided in subsection 170d of the Act with the contractor, without further consideration from the contractor, at any time all of the following circumstances are present:

(A) The services or supplies furnished under this contract are being used in connection with any activity or situation which involves a risk of substantial nuclear incident; and

(B) there is not in effect an indemnity agreement as described in subparagraph (3) of this clause; and

(C) DOE's authority to enter into agreements of indemnification under section 170(d) of the Act has not expired or been so amended as to deprive DOE of authority to enter into such an agreement.

(b) In that agreement, DOE will indemnify the contractor and other persons indemnified against public liability arising out of, or in connection with, the contractual activity of this contract.

(c) Such agreement will be based on the then current approved form of section 170d indemnity agreement used in contracts between DOE and its contractors, and shall further include an obligation to indemnify the contractor, and persons indemnified for such public liability arising out of, or resulting from, nuclear incidents occurring between the time when the services or supplies furnished under this contract are used in connection with any activity or situation which involves risk of a substantial nuclear incident and the time when such agreement is executed.

(d) The indemnity provided by DOE under all indemnity agreements entered into by DOE under section 170 of the Act, including this agreement, shall not exceed $500 million in the aggregate for each nuclear incident, without regard to the number of persons indemnified, excluding the reasonable costs of investigating and settling claims and defending suits for damages, provided, however, that with respect to incidents occurring outside the United States, such aggregate indemnity shall not exceed $100 million, including such reasonable costs.

970.2870 Indemnification.

(a) DOE Policies provide for indemnification of DOE management and operating contractors against public liability for a nuclear incident arising out of or in connection with operation of production or utilization facilities, and work which entails the risk of public liability for a substantial nuclear incident.

(b) Details of these policies are discussed at 950.70 Indemnification of DOE contractors.

(c) Section 170d of the Atomic Energy Act of 1954, as amended, authorizes DOE "to enter into agreements of indemnification with its management and operating contractors for the construction or operation of production or utilization facilities or other activities under contracts for the benefit of the United States involving activities under the risk of public liability for a substantial nuclear incident."

(d) Heads of Contracting Activities are authorized to negotiate statutory indemnity agreements with management and operating contractors following the procedures at 950.70. They may enter into a statutory indemnity agreement whenever it has been determined that a contractor that is engaged in activities involving the risk of public liability for a substantial nuclear incident.

(e) The contract clause contained in 970.5204-6 shall be incorporated in management and operating contracts in which a statutory indemnity agreements is to be included upon a determination that the contractor is under risk of public liability for the occurrence of a substantial nuclear incident in the course of performance of the contract work. The contract clause contained in 970.5204-7 shall be incorporated in management and operating contracts in which a statutory indemnity agreement is to be included upon a determination that the contractor is under risk of public liability for a substantial nuclear incident caused by a product delivered to or for DOE under the contract where such product is expected to be used in connection with a facility or device not covered by a statutory indemnity agreement.

(f) A DOE contractor with whom a statutory indemnity agreement has been executed in the form contained in 970.5204-6 may include in any of its subcontracts and purchase orders a representation that the work under the prime contract is covered by a statutory indemnity agreement with the DOE, and that this indemnity covers all persons who may be liable for public liability for any nuclear incident arising out of or in connection with the activity under the prime contract. A suggested form of "representation" that may be provided to the contractor follows:

Statutory Indemnity

The contractor represents that there is included in its prime contract with DOE an indemnity agreement, entered into by DOE under the authority of section 170 of the Atomic Energy Act of 1954, as amended by Public Law 95-256 (the "Price-Anderson Act"), a copy of which may be obtained from the contractor (or is attached hereto); that, under said agreement, DOE has agreed to indemnify the contractor and other persons indemnified, including the subcontractor, against claims for public liability (as defined in said Act) arising out of or in connection with the contractual activity; that the indemnity applies to covered nuclear incidents which (1) take place at a "contract location" (which term, as defined in the indemnity agreement, does not include the location of the subcontractor's plant and facilities), or (2) arise out of or in the course of transportation of source, special nuclear or by-product material to or from a "contract location," or (3) involve items produced or delivered under the prime contract. The obligation of DOE to indemnify is subject to the conditions stated in the indemnity agreement.

(g) DOE shall not approve the inclusion, in the subcontracts and purchase orders of an indemnified management and operating contractor, of any provision whereby the management and operating contractor indemnifies the subcontractor or supplier against public liability for a nuclear incident because any such liability will be covered by the statutory indemnity agreement of the prime contractor.

(h) Management and operating contractors with whom statutory indemnity agreements under the authority of section 170d of the Atomic Energy Act of 1954, as amended, are executed will not normally be required or permitted to furnish financial protection by purchase of insurance to cover public liability for nuclear incidents, except (1) that DOE contractors now covered by insurance against such liability, with the approval of the DOE, may continue to carry such insurance; and (2) with the approval of the Office of Industrial Relations, contractors engaged in the operation of DOE facilities may be required or permitted to furnish financial protection in an amount not to exceed $1 million.

Senator **Bingaman**. OK. I have a few other questions I'd like to submit for the record, Mr. Chairman, if I could. Thank you.

The **Chairman**. Thank you very much, Senator.

Senator Hecht.

Senator **Hecht**. No questions, Mr. Chairman. As you well know, I was at another meeting and was unable to attend earlier, so I apologize to the people on the panel.

The **Chairman**. Since I was attending the same meeting earlier, I understand why you were there, and I understand that the meeting was both necessary and I hope profitable.

Mr. Secretary, could you explain to us the difference between the pre- and post-1957 contractor indemnity provisions? Are the contractors now, or were they ever in the past, exposed to potential DOE losses for gross negligence or willful misconduct?

Mr. **Vaughan**. Mr. Chairman, prior to the passage of Price-Anderson in 1957, the concept of affording the public with a special legal avenue of compensation for loss or damage due to nuclear incidents was not explicitly in use. However, during the Manhattan project the industrial and other organizations that were recruited to construct and operate the Government's nuclear facilities did seek contractual protection against the risks involved in such activities, and therefore indemnity provisions were included in the contracts for construction and operation of these facilities.

These included some contractors who are still in the business with us, such as Du Pont, the University of Chicago, and the University of California. And when those operations of the Manhattan engineering district were transferred to the Atomic Energy Commission, the AEC continued those responsibilities. And it is those kinds of agreements which ultimately led us to the wisdom of Congress in 1957 to incorporate Price-Anderson, since the type of insurance normally available to industrial enterprises was not obtainable against the risks involved in atomic energy activities.

This was also consistent with the Government's policy of self-insurance.

The **Chairman**. Are the contractors now, or were they ever in the past, exposed to the potential DOE lawsuits for gross negligence or willful misconduct?

Mr. **Vaughan**. In general, Mr. Chairman, the indemnity agreements which were negotiated by the Atomic Energy Commission for nuclear activity somewhat followed the broad lines of the early agreements of the Manhattan engineer district, and in most cases they did not cover damages resulting from bad faith or gross negligence.

There were some variations——

The **Chairman**. No, I didn't ask negligence or bad faith. I asked gross negligence or willful misconduct, which is a different thing.

Mr. **Vaughan**. Again, the early AEC contracts did not cover willful misconduct in those cases.

The **Chairman**. Do they now?

Ms. **Kuznick**. Since the passage—excuse me, but I would like to answer this question. Since the passage of Price-Anderson in 1957, our contracts have not had a gross negligence or willful misconduct exception in them. Before the passage of the Price-Anderson Act, Congress considered including an exception for gross negligence from the definition of public liability in Price-Anderson and decided not to include that exception because it could result in litigation on collateral issues that would impede the efficient channeling of liability, which is the purpose of Price-Anderson, and it could impede the payment of claims to potential victims.

The CHAIRMAN. Well is the answer, then, that the contractor is shielded by Price-Anderson against gross negligence and willful misconduct? Is that your statement?

Ms. KUZNICK. Well, with regard to nuclear incidents as defined by the Price-Anderson Act, the Department indemnifies the contractor to the limit. So there would basically be no lawsuit between the Department and the contractor, and the Department would indemnify the contractor up to the limit. So it appears there would be no lawsuits against the contractor.

The CHAIRMAN. How about beyond the limits?

Ms. KUZNICK. Well, beyond the limits Congress would need to review the situation and——

The CHAIRMAN. You mean there would be no liability beyond the limit?

Ms. KUZNICK. There would be no liability beyond the limit unless Congress acted.

The CHAIRMAN. Even for gross negligence or willful misconduct?

Ms. KUZNICK. That's right, under the present situation.

The CHAIRMAN. And would that apply to less than the nuclear—the accident for any liability less than the accident prescribed in Price-Anderson?

Ms. KUZNICK. If it's not a nuclear incident as defined under Price-Anderson, our contracts generally do have a provision where if there's willful misconduct or bad faith on the part of the corporate officers or managing supervisors of one of our contractors, that we will not reimburse them for those litigation expenses.

The CHAIRMAN. So it is your—I'm not asking you now just with respect to Government liability, or DOE responsibility. How about civil liability for the civil actions outside of those activities conducted by DOE?

Ms. KUZNICK. Oh, the Department of Energy itself, it's own——

The CHAIRMAN. No; I'm talking about the contractor liability outside of the Price-Anderson coverage for incidents not covered by Price-Anderson and not those activities which are outside of the scope of Price-Anderson and DOE's supervision.

Ms. KUZNICK. If it's outside the scope of Price-Anderson——

The CHAIRMAN. Yes.

Ms. KUZNICK [continuing]. Then the Department——

The CHAIRMAN. I'm not asking about the Department. Have you looked at the contractor liability? I understand you represent the Government——

Ms. KUZNICK. I see what you're saying. You're saying the liability of——

The CHAIRMAN [continuing]. I'm not asking you about Government liability.

Ms. KUZNICK. You mean the liability of the contractor.

The CHAIRMAN. Yes.

Ms. KUZNICK. To third parties. I'm sorry. I misunderstood the question, obviously.

With regard to other—since as I explained earlier, our nuclear contractors are generally cost-reimbursable contractors, so that we pay any claims that they may——

The CHAIRMAN. You still misunderstand where I'm coming from. Maybe I'm asking the wrong witness.

Ms. KUZNICK. No; I think I'm getting to it.

The CHAIRMAN. I'm not talking about the ones that you have contracts with. I'm talking about the liability where you don't have contracts, the liability of people who operate in this field. Maybe I should ask a different witness.

Mr. VAUGHAN. I think that it might be better to ask a different witness, because if the person is not operating under a DOE contract, they would be subject to whatever rules might apply in a normal civil circumstance.

The CHAIRMAN. And there is no waiver of liability.

Because of Price-Anderson on the non-Price-Anderson activities.

Mr. VAUGHAN. That is correct.

The CHAIRMAN. And if they're liable under general law, they're liable under general law. Is that correct?

Mr. VAUGHAN. That is correct.

The CHAIRMAN. That's what I was getting at is: What is the exemption granted by Price-Anderson.

Mr. VAUGHAN. I think the key point here is twofold. The question of indemnifying the contractor without exception was a judgment, again, of balance, because to have done otherwise under Price-Anderson would have interfered with the provision to assure timely assured funds in the event of an extraordinary nuclear occurrence.

I think I would like to note for the record, because I know this is a question of interest to a number of people, that we went back and carefully looked at our history; and to the best of our knowledge, there has never in the history of the Atomic Energy Commission, ERDA, or DOE, been any instance where a question has arisen regarding the willful misconduct or gross negligence on the part of a contractor in conjunction with his nuclear activities.

The CHAIRMAN. I want to ask a couple of questions that deal with statements that have been made by others, and I took a little time to go into this because I think Senator Metzenbaum's question implied that there was no liability for contractors at all for their activities, willful or negligent or at whatever level, and there's just the area of coverage by Price-Anderson which would exempt them, as I understand the issue.

Mr. VAUGHAN. Except in the case of an extraordinary nuclear occurrence [ENO] under Price-Anderson, DOE-contractor liability is determined by State law. Generally, DOE indemnifies those contractors that are found liable for actions arising out of DOE contract activity unless such lability arises out of willful misconduct or bad faith on the part of a contractor's corporate officers. In cases arising under Price-Anderson, however, and only in such cases, DOE indemnifies its contractors even if the liability results from willful misconduct or bad faith.

The CHAIRMAN. Outside of the Price-Anderson, their liability would be established under general tort law, which is primarily

State law, as it deals with non-Federal activities or nongovernmental activities.

Mr. **Vaughan**. Outside of an ENO under Price-Anderson, that is correct.

The **Chairman**. So that if there is liability under the State law, there is liability under the State law, with the exception of that portion of their activities which might be covered by Price-Anderson.

Mr. **Vaughan**. That is correct.

The **Chairman**. Second, the statement was made earlier, I think in a question or a response to the question, with respect to the statute of limitations. Senator Bingaman asked the question about the statute of limitations' application under Price-Anderson, and I read that statute differently than the question implied.

Because I think Price-Anderson says—and I hope you will comment and correct me if I am wrong—Price-Anderson says that a statute of limitations of less than 20 years cannot bar the claim. It doesn't say that there is a 20-year statute of limitations. Therefore, the States could, if they wished, have a longer statute of limitations. Is that not correct?

Ms. **Kuznick**. Yes; that is correct.

The **Chairman**. So that Price-Anderson is not the maximum time period, it's the minimum time period. Is that not correct?

Ms. **Kuznick**. Yes; that's correct in the case of an ENO.

The **Chairman**. Let me ask perhaps a kind of a—it's almost rhetorical, because I know I think what your answer would be, but I think I must ask it for the record. If Price-Anderson were allowed to expire, could DOE still attract the same caliber of private firms that we have today?

Mr. **Vaughan**. Senator McClure, I do not believe that we could, and that statement is based on over 26 years of personal experience dealing with a large number of contractors doing business with DOE.

The **Chairman**. And finally——

Mr. **Rusche**. Mr. Chairman, could I add a comment to that?

The **Chairman**. Surely.

Mr. **Rusche**. Beyond the normal departmental operations with contractors, I think the comment is even more relevant to the waste operations of the Department. I think it is absolutely essential that we have those kinds of provisions available for the waste activities.

The **Chairman**. I interpret the bill that we have introduced as not imposing a ceiling on liability under Price-Anderson. There is unlimited liability in terms of total coverage under the bill that's introduced. All the $2.4 billion does is establish a pool for the instant payment of claims under the provisions of Price-Anderson with the issue of where the money comes from, or how it is raised or made available to be determined by the Congress beyond the $2.4 billion, but without imposing any limits on that liability. Do you read the bill the same way?

Mr. **Vaughan**. Yes, sir, I do. And I believe that that is consistent with the existing principles of Price-Anderson, except that you have increased the maximum amount consistent with the passage of time and inflation and some other factors.

The CHAIRMAN. Not the maximum amount——

Mr. VAUGHAN. The maximum amount instantly available prior to review by Congress, in the context of your question.

The CHAIRMAN. All right. Mr. Rusche.

Mr. RUSCHE. I would just like to add, Senator, that I certainly share the view that you have just expressed. In my discussion with Senator Evans a moment ago, I attempted to make that point. I think that if you get to the nub of the discussion that we have had with States, it goes to this very subtlety, if you care to call it, which is not very subtle in my opinion.

I think States, and perhaps others, have tended to think of that readily accessible, immediately available asset for the purpose of prompt compensation as being a limit. I think the use of terminology like "unlimited" implies a precommitment of magnitude not limited, and I don't think it's practical from a business standpoint, a political standpoint, or from a resource standpoint for that impression to be abroad.

On the other hand, it seems to me particularly in our waste activities, in which we are dealing with something that is philosophically and conceptually different from anything that we've ever done, it is very important that the additional position of the Congress be made clear and be understood by others that there is no a priori limit. Congress has just indicated that, beyond that immediately available portion, it will then decide in light of circumstances available, what ought to be the compensation.

And I would hope that that would lead our friends in the States to come to a positive conclusion, as I suggested with Senator Evans a moment ago.

The CHAIRMAN. Thank you.

Senator Evans, do you have further questions?

Senator EVANS. Well, Mr. Chairman, I think that we've got a long set of other witnesses——

The CHAIRMAN. We have.

Senator EVANS [continuing]. And I will reserve my other questions to written questions to the witnesses. I have several of Mr. Vaughan and a couple more for Mr. Rusche.

I would just say, in response to your last statement, I think all that you have said is perfectly well understood by the States, perfectly well understood. I think it was perfectly clear, to me at least, in what you just said. They just don't agree. [Laughter.]

Mr. RUSCHE. Perhaps you can help us in some way.

Senator EVANS. Well, I don't agree, yet, either. [Laughter.]

Mr. RUSCHE. Perhaps I can help you. [Laughter.]

Senator EVANS. Well, that's the nature of these hearings, I guess, to try and get us there.

Mr. RUSCHE. We certainly appreciate the opportunity.

The CHAIRMAN. There will be other questions submitted by myself and perhaps other members of the committee for a response to the record in writing. I will ask that Members have those written questions to us by close of business on today so that we may submit them to you for your responses for the record, and I would express the hope that those questions may be responded to in a much shorter timeframe than the 60-day suggestion that Senator

Metzenbaum made a moment ago. I would hope we can complete our record on these hearings much sooner than that.

Mr. VAUGHAN. Mr. Chairman, we are vitally interested in completing the hearing record and achieving some positive action on this subject, and we will certainly respond as promptly as we possibly can.

The CHAIRMAN. Thank you very much, and thank you for your testimony this morning.

Mr. VAUGHAN. We appreciate the opportunity.

The CHAIRMAN. We will next hear from the Nuclear Regulatory Commission, Mr. Palladino, Chairman; Mr. Roberts; Messrs. Bernthal, Asselstine, and Zech.

I wonder if we might have order, please. I notice we have prepared statements from each of you. I will invite each of you, without omitting essential matters, to summarize the statements. Your prepared statements will, of course, appear in the record in full as if delivered at this point.

We will lead off with the Chairman.

STATEMENT OF HON. NUNZIO J. PALLADINO, CHAIRMAN, NUCLEAR REGULATORY COMMISSION

Mr. PALLADINO. Thank you, Mr. Chairman.

I am pleased to have this opportunity to appear before the subcommittee today. With me are my fellow Commissioners and members of the NRC staff. With your permission, I would like to make a brief oral statement, and submit a longer written statement for the record.

As you are aware, in December 1983 the Commission submitted to Congress a report entitled "The Price-Anderson Act—The Third Decade." The recommendations in that report have generated considerable discussion in the intervening months. To review briefly, the major recommendations of the report were as follows:

One, the report recommended that the Congress extend the Price-Anderson Act based on the belief that the act provides a valuable public benefit by establishing a system for the prompt and equitable settlement of public liability claims resulting from a nuclear accident.

Two, the report recommended that the Congress amend the Price-Anderson Act to substitute an annual limitation on liability for the present absolute limitation, and to raise the maximum retrospective premium that can be charged from the present $5 million per reactor to $10 million per reactor. It should be noted for the record that the body of the 1983 report contains language recommending a limit of $10 million per reactor per incident per year. However, the Commission's intention as correctly stated in appendix 1 of the report and subsequently confirmed by the staff was to recommend a flat limit of $10 million per reactor per year, and that needs to be corrected, and we will officially correct it to the Congress.

Three, the report recommended that the Congress retain the present statutory language for the finding of an extraordinary nuclear occurrence to establish a definitive basis for distinguishing valid claims and to conserve resources to pay for these claims. In this regard it should be noted that the Commission published on April 9, 1985, a proposed rule to redefine the criteria for an extraordinary nuclear occurrence.

Four, the report recommended that the Congress extend the statute of limitations for filing a public liability claim arising from a nuclear accident from 20 to 30 years in order to provide greater assurance that latent injuries caused by a nuclear accident are provided protection under the Price-Anderson system.

Of these recommendations, the one that has generated the most critical comment is the proposal to substitute an annual limitation on liability for accidents at large commercial nuclear powerplants for the present absolute liability limit. Instead of the collection of a single retrospective premium per reactor for each incident as under the present system, retrospective premiums would be collected year after year until all of the public liability claims resulting from an accident are paid.

Criticism of this approach has been twofold. The most fundamental pertains to an equity question that only Congress can resolve. It is argued that this approach would change the balance of equities supporting the Price-Anderson system, shifting to the utility industry from the taxpayers the full costs of a catastrophic nuclear accident.

This is a serious concern and one which the Congress will have to address carefully as a matter of public policy. The Commission recognizes that, in any legislation, a balancing of equities must be made by the Congress and that other alternatives, based on a different balance, might provide adequate assurance that all public liability claims could be paid.

Criticism has also been directed against the recommendation based on the belief that the utilities would suffer a severe economic impact if they were assessed an annual $10 million retrospective premium. In response to this criticism, the NRC staff recently completed an analysis of the financial impacts of an annual $10 million assessment on a cross section of utilities and has concluded that such an annual assessment would not place unusual financial stress on most licensees.

With your permission, Mr. Chairman, I would like to offer a copy of that NRC staff study for the record. Members of the NRC staff are available here to respond to subcommittee questions.

Mr. Chairman, I would simply note that these various issues have been under review by the Commission. Most recently, on June 20, 1985, the Commission held a public meeting to receive comments from a variety of parties on Price-Anderson with particular attention given to the liability limitation issue.

Since the submission of the 1983 report to Congress, there has been a change in Commission membership, and two Commissioners have revised their positions. My own support of this recommendation continues. I have asked each of the Commissioners to prepare a statement of his current position.

With regard to S. 1225, the Simpson-McClure bill, the NRC staff has prepared an analysis, which I would like to submit for the record.

The CHAIRMAN. It will be made a part of the record.

Mr. PALLADINO. Thank you, Mr. Chairman. This concludes my oral remarks.

The CHAIRMAN. Thank you very much.

[The prepared statement of Mr. Palladino and two studies submitted follow:]

PREPARED TESTIMONY

SUBMITTED BY

UNITED STATES NUCLEAR REGULATORY COMMISSION

PRESENTED BY

NUNZIO J. PALLADINO, CHAIRMAN

MR. CHAIRMAN, THE OTHER MEMBERS OF THE COMMISSION AND I ARE PLEASED TO APPEAR BEFORE THE SUBCOMMITTEE TO TESTIFY ON THE REPORT SUBMITTED TO THE CONGRESS IN DECEMBER 1983 ENTITLED, "THE PRICE-ANDERSON ACT -- THE THIRD DECADE". THE RECOMMENDATIONS IN THAT REPORT HAVE GENERATED CONSIDERABLE COMMENT. MOST OF THE CRITICAL COMMENTS HAVE FOCUSED ON THE RECOMMENDATION TO SUBSTITUTE AN ANNUAL LIMITATION ON LIABILITY FOR ACCIDENTS AT LARGE COMMERCIAL NUCLEAR POWER PLANTS FOR THE PRESENT ABSOLUTE LIMITATION ON LIABILITY. BEFORE DISCUSSING THE 1983 RECOMMENDATIONS, I WOULD LIKE TO DESCRIBE BRIEFLY THE PRICE-ANDERSON ACT IN GENERAL TO SET THE FRAMEWORK FOR MY LATER DISCUSSION.

THE PRICE-ANDERSON ACT WAS INITIALLY ENACTED IN 1957 FOR A TEN-YEAR PERIOD. IT WAS AMENDED AND EXTENDED IN 1965 AND IN 1975. ABSENT CONGRESSIONAL ACTION, THE ACT WILL EXPIRE ON AUGUST 1, 1987 WITH RESPECT TO AUTHORITY TO INDEMNIFY NEW LICENSEES.

THE ACT REQUIRES LICENSEES OF COMMERCIAL NUCLEAR POWER PLANTS HAVING A RATED CAPACITY OF 100,000 ELECTRICAL KILOWATTS OR MORE TO PROVIDE PROOF TO THE NRC THAT THEY HAVE FINANCIAL PROTECTION IN THE FORM OF PRIVATE NUCLEAR INSURANCE, OR IN SOME OTHER FORM APPROVED BY THE COMMISSION, IN AN AMOUNT EQUAL TO THE MAXIMUM AMOUNT OF LIABILITY INSURANCE AVAILABLE AT

REASONABLE COST AND ON REASONABLE TERMS FROM PRIVATE SOURCES. THAT FINANCIAL PROTECTION, CURRENTLY $635 MILLION, CONSISTS OF A PRIMARY LAYER OF NUCLEAR LIABILITY INSURANCE OF $160 MILLION AND A SECONDARY RETROSPECTIVE PREMIUM INSURANCE LAYER. IN THE EVENT OF A NUCLEAR ACCIDENT CAUSING DAMAGES EXCEEDING $160 MILLION, THE LICENSEE OF EACH COMMERCIAL NUCLEAR POWER PLANT LICENSED TO OPERATE WOULD BE ASSESSED A PRORATED SHARE OF DAMAGES IN EXCESS OF THE PRIMARY INSURANCE LAYER UP TO $5 MILLION PER REACTOR PER INCIDENT. WITH 95 COMMERCIAL REACTORS OPERATING UNDER THIS SYSTEM, THE SECONDARY INSURANCE LAYER TOTALS $475 MILLION.

THE PRICE-ANDERSON ACT ALSO AUTHORIZES THE COMMISSION TO ENTER INTO INDEMNITY AGREEMENTS WITH REACTOR LICENSEES. THESE AGREEMENTS SPECIFY THE AMOUNT OF FINANCIAL PROTECTION REQUIRED OF LICENSEES, IF ANY, AND THE OBLIGATION OF THE FEDERAL GOVERNMENT TO PROVIDE FUNDS, I.E., "GOVERNMENT LIABILITY", IN THE EVENT THAT A NUCLEAR ACCIDENT EXHAUSTS THE PRIVATE LIABILITY INSURANCE OF WHERE NO PRIVATE LIABILITY INSURANCE IS REQUIRED.

THE PRICE-ANDERSON ACT PLACES A CEILING ON THE TOTAL AMOUNT OF PUBLIC LIABILITY RESULTING FROM A NUCLEAR ACCIDENT. FOR LARGE COMMERCIAL REACTORS, THIS "LIMIT OF LIABILITY" IS CURRENTLY TIED TO THE MAXIMUM AMOUNT OF INSURANCE AVAILABLE THROUGH PRIVATE SOURCES. FOR MANY YEARS, THE LIMIT OF

LIABILITY WAS $560 MILLION. CONGRESS PROVIDED THAT THE LIMITATION ON LIABILITY WOULD GROW, ONCE THE TOTAL PROTECTION OF THE PRIMARY AND SECONDARY LAYERS OF INSURANCE REACHED $560 MILLION. IN NOVEMBER 1982, THE $560 MILLION LEVEL WAS REACHED AND THE GOVERNMENT'S INDEMNITY WAS ESSENTIALLY ELIMINATED. THE PRESENT LIMIT OF $635 MILLION WILL CONTINUE TO INCREASE IN INCREMENTS OF $5 MILLION FOR EACH NEW COMMERCIAL REACTOR LICENSED TO OPERATE.

I WOULD NOW LIKE TO BRIEFLY EXPLAIN THE MAJOR RECOMMENDATIONS MADE IN THE DECEMBER 1983 REPORT. THESE WERE AS FOLLOWS:

(1) THE REPORT RECOMMENDED THAT THE CONGRESS EXTEND THE PRICE-ANDERSON ACT BASED ON THE BELIEF THAT THE ACT PROVIDES A VALUABLE PUBLIC BENEFIT BY ESTABLISHING A SYSTEM FOR THE PROMPT AND EQUITABLE SETTLEMENT OF PUBLIC LIABILITY CLAIMS RESULTING FROM A NUCLEAR ACCIDENT. EXTENSION OF THE ACT WOULD ENSURE THAT THE SAME AMOUNT, TYPE AND TERMS OF PUBLIC LIABILITY PROTECTION WILL BE PROVIDED FOR FUTURE AS WELL AS EXISTING NUCLEAR POWER PLANTS.

(2) THE REPORT RECOMMENDED THAT THE CONGRESS AMEND THE PRICE-ANDERSON ACT TO SUBSTITUTE AN ANNUAL LIMITATION ON LIABILITY FOR THE PRESENT ABSOLUTE LIMITATION AND TO RAISE

THE MAXIMUM RETROSPECTIVE PREMIUMS THAT CAN BE CHARGED FROM THE PRESENT $5 MILLION PER REACTOR PER INCIDENT TO $10 MILLION PER REACTOR PER YEAR. (IT SHOULD BE NOTED FOR THE RECORD THAT THE BODY OF THE 1983 REPORT CONTAINS LANGUAGE RECOMMENDING A LIMIT OF $10 MILLION PER REACTOR PER INCIDENT PER YEAR. HOWEVER, THE COMMISSION'S INTENTION, AS CORRECTLY STATED IN APPENDIX I OF THE REPORT AND SUBSEQUENTLY CONFIRMED BY THE STAFF, WAS TO RECOMMEND A FLAT LIMIT OF $10 MILLION PER REACTOR PER YEAR.)

THIS RECOMMENDATION HAS TWO FACETS. FIRST, IT WOULD PERMIT ASSESSMENT OF RETROSPECTIVE PREMIUMS IN SUCCEEDING YEARS UNTIL ALL PUBLIC LIABILITY CLAIMS FROM AN ACCIDENT ARE PAID. SECOND, AN INCREASE IN THE SIZE OF THE ANNUAL RETROSPECTIVE PREMIUMS TO $10 MILLION WOULD SUBSTANTIALLY INCREASE FUNDS AVAILABLE TO PAY PUBLIC LIABILITY CLAIMS ARISING OUT OF AN ACCIDENT. MOREOVER, THIS FUND WOULD MAKE AVAILABLE ANNUALLY AN AMOUNT ROUGHLY COMPARABLE TO THE AMOUNT OF INSURANCE COVERAGE NOW PROVIDED FOR MOST LARGE COMMERCIAL NUCLEAR POWER PLANTS TO PAY ON-SITE PROPERTY DAMAGE CLAIMS. AN INCREASE IN THE RETROSPECTIVE PREMIUMS TO $10 MILLION WOULD NOT, ACCORDING TO A RECENTLY COMPLETED NRC STAFF STUDY, JEOPARDIZE THE FINANCIAL VIABILITY OF THE PARTICIPATING UTILITIES.

(3) THE REPORT RECOMMENDED THAT THE CONGRESS RETAIN THE PRESENT STATUTORY LANGUAGE FOR THE FINDING OF AN EXTRAORDINARY NUCLEAR OCCURRENCE TO ESTABLISH A DEFINITIVE BASIS FOR DISTINGUISHING VALID CLAIMS AND TO CONSERVE RESOURCES TO PAY FOR THESE CLAIMS. IN THIS REGARD IT SHOULD BE NOTED THAT THE COMMISSION PUBLISHED ON APRIL 9, 1985, A PROPOSED RULE TO REDEFINE THE CRITERIA FOR AN EXTRAORDINARY NUCLEAR OCCURRENCE.

(4) THE REPORT RECOMMENDED THAT THE CONGRESS EXTEND THE STATUTE OF LIMITATIONS FOR FILING A PUBLIC LIABILITY CLAIM ARISING FROM A NUCLEAR ACCIDENT FROM 20 TO 30 YEARS IN ORDER TO PROVIDE GREATER ASSURANCE THAT LATENT INJURIES CAUSED BY A NUCLEAR ACCIDENT ARE PROVIDED PROTECTION UNDER THE PRICE-ANDERSON SYSTEM. THE REPORT ALSO RECOMMENDED A STUDY OF EXPERIENCE GAINED FROM OTHER ADMINISTRATIVE SYSTEMS FOR COMPENSATING LATENT INJURY CLAIMS BEFORE ANY FURTHER CHANGES TO THE CAUSATION AND PROOF OF DAMAGES PROVISION OF THE PRICE-ANDERSON ACT.

AS MENTIONED EARLIER IN MY TESTIMONY, THE RECOMMENDATION THAT HAS GENERATED THE MOST CRITICAL COMMENT IS THE ONE WHICH PROPOSES TO SUBSTITUTE AN ANNUAL LIMITATION ON LIABILITY FOR ACCIDENTS AT LARGE COMMERCIAL NUCLEAR POWER PLANTS FOR THE PRESENT ABSOLUTE LIABILITY LIMIT. INSTEAD OF THE COLLECTION OF A SINGLE RETROSPECTIVE PREMIUM PER REACTOR FOR EACH ACCIDENT AS

UNDER THE PRESENT SYSTEM, RETROSPECTIVE PREMIUMS WOULD BE COLLECTED YEAR AFTER YEAR UNTIL ALL OF THE PUBLIC LIABILITY CLAIMS RESULTING FROM AN ACCIDENT ARE PAID.

THIS ANNUAL LIMITATION APPROACH IS PREMISED ON THE VIEW THAT THE PRICE-ANDERSON ACT SHOULD BE MODIFIED TO MINIMIZE BOTH THE POTENTIAL FOR UNCOMPENSATED LOSSES BY VICTIMS OF A COMMERCIAL NUCLEAR POWER PLANT ACCIDENT AND THE NEED FOR ADDITIONAL FINANCIAL CONTRIBUTIONS BY THE FEDERAL GOVERNMENT TO MEET PUBLIC LIABILITY CLAIMS. THIS APPROACH IS INTENDED TO ENSURE THE AVAILABILITY OF SUFFICIENT INSURANCE FUNDS TO PAY CLAIMS EVEN FOR HIGH-CONSEQUENCE ACCIDENTS WHILE AVOIDING THE IMPOSITION OF POTENTIALLY CATASTROPHIC LOSSES ON UTILITIES OR SUPPLIERS TO THE INDUSTRY. THE APPROACH WOULD ALSO PROVIDE A MECHANISM FOR COMPENSATING LATENT INJURY CLAIMS, THEREBY ELIMINATING THE NEED, AS UNDER THE PRESENT SYSTEM, TO RESERVE A PORTION OF THE INITIAL INSURANCE FUNDS COLLECTED TO PAY SUCH CLAIMS SHOULD THEY ARISE. THE ANNUAL LIMITATION ON LIABILITY WOULD APPLY TO EXISTING AS WELL AS FUTURE PLANTS TO THE EXTENT THAT THE LAW ALLOWS.

CRITICISM OF THIS APPROACH HAS BEEN TWOFOLD. THE MOST FUNDAMENTAL PERTAINS TO AN EQUITY QUESTION THAT ONLY CONGRESS CAN RESOLVE. IT IS ARGUED THAT THIS APPROACH WOULD CHANGE THE BALANCE OF EQUITIES SUPPORTING THE PRICE-ANDERSON SYSTEM, SHIFTING TO THE UTILITY INDUSTRY FROM THE TAXPAYERS (THROUGH

THE CONGRESS) THE FULL COSTS OF A CATASTROPHIC NUCLEAR ACCIDENT. THIS IS A SERIOUS CONCERN AND ONE WHICH THE CONGRESS WILL HAVE TO ADDRESS CAREFULLY AS A MATTER OF PUBLIC POLICY. THE COMMISSION RECOGNIZES THAT, IN ANY LEGISLATION, A BALANCING OF EQUITIES MUST BE MADE BY THE CONGRESS AND THAT OTHER ALTERNATIVES, BASED ON A DIFFERENT BALANCE, MIGHT PROVIDE ADEQUATE ASSURANCE THAT ALL PUBLIC LIABILITY CLAIMS COULD BE PAID.

CRITICISM HAS ALSO BEEN DIRECTED AGAINST THE ANNUAL LIMITATION RECOMMENDATION BASED ON THE BELIEF THAT THE UTILITIES WOULD SUFFER A SEVERE ECONOMIC IMPACT IF THEY WERE ASSESSED AN ANNUAL $10 MILLION RETROSPECTIVE PREMIUM. IN RESPONSE TO THIS CRITICISM, THE NRC STAFF RECENTLY COMPLETED AN ANALYSIS OF THE FINANCIAL IMPACTS OF AN ANNUAL $10 MILLION ASSESSMENT ON A CROSS SECTION OF UTILITIES AND HAS CONCLUDED THAT SUCH AN ANNUAL ASSESSMENT WOULD NOT PLACE UNUSUAL FINANCIAL STRESS ON MOST LICENSEES. THE STAFF'S CONCLUSIONS REST PRINCIPALLY ON THE FOLLOWING REASONS:

- REPORTS FILED WITH THE COMMISSION SINCE 1978 ON LICENSEE GUARANTEE OF PREMIUM PAYMENTS FOR THE RETROACTIVE INSURANCE PROGRAM SHOW ESSENTIALLY THAT NEARLY ALL LICENSEES COULD HAVE PAID A $10 MILLION ASSESSMENT PER REACTOR FROM INTERNAL CASH FLOW WITHIN A THREE-MONTH PERIOD. HOWEVER, ANNUAL PAYMENTS OF ASSESSMENTS MIGHT

REDUCE OTHER OBJECTIVES, SUCH AS THE ABILITY TO FUND NEW CONSTRUCTION.

- A REVIEW OF FINANCIAL STATEMENTS OF TEN SELECTED UTILITIES FOR THREE YEARS SHOWS THAT FOR MOST OF THESE UTILITIES EVEN $50 MILLION IN TOTAL ASSESSMENTS (THAT IS, ASSESSMENTS FOR BOTH LIABILITY AND PROPERTY INSURANCE UNDER ALL INSURANCE PROGRAMS) FOR EACH OF THE THREE YEARS EVALUATED COULD HAVE BEEN PAID FROM INTERNAL CASH FLOW. HOWEVER, FINANCIAL INDICATORS IN SOME CASES SHOW SIGNIFICANT STRAIN FOR THESE COMPANIES.

- TOTAL OPERATING COSTS FOR RECENTLY LICENSED NUCLEAR PLANTS ARE ABOUT $500 MILLION PER REACTOR. AN ANNUAL $10 MILLION ASSESSMENT WOULD BE TWO PERCENT OF THAT LEVEL.

- FINALLY, A REVIEW OF PUBLIC UTILITY COMMISSION PRECEDENTS AND PRACTICES, COUPLED WITH PAST STATEMENTS OF UTILITY REPRESENTATIVES, STRONGLY SUGGESTS THAT RETROSPECTIVE PREMIUMS WOULD BE RECOVERABLE IN RATES ON THE BASIS OF THEIR BEING PRUDENT EXPENDITURES. HOWEVER, RECOVERY WOULD DEPEND ON DECISIONS OF STATE PUBLIC UTILITY COMMISSIONS, AND SUCH DECISIONS SOMETIMES DEVIATE FROM ESTABLISHED PRECEDENTS. IF RECOVERY THROUGH UTILITY RATES WERE ALLOWED, THE IMPACT ON CUSTOMERS' BILLS WOULD BE LESS THAN TWO PERCENT.

WITH YOUR PERMISSION, MR. CHAIRMAN, I WOULD LIKE TO OFFER A COPY OF THE NRC STAFF STUDY FOR THE RECORD. MEMBERS OF THE NRC STAFF ARE AVAILABLE TO RESPOND TO SUBCOMMITTEE QUESTIONS. I ALSO WISH TO OFFER FOR THE RECORD THE NRC'S STAFF ANALYSIS OF S. 1225, THE PRICE-ANDERSON ACT AMENDMENTS ACT OF 1985.

MR. CHAIRMAN, MY STATEMENT SUMMARIZES THE MAJOR RECOMMENDATIONS OF THE 1983 REPORT AND HIGHLIGHTS THE MOST SIGNIFICANT ISSUES RAISED IN THE SUBSEQUENT COMMENTS ON THE MOST CONTROVERSIAL OF THESE -- THE RECOMMENDATION TO SUBSTITUTE AN ANNUAL LIABILITY LIMIT FOR THE PRESENT ABSOLUTE LIMITATION. THESE ISSUES HAVE BEEN UNDER REVIEW BY THE COMMISSION. MOST RECENTLY, ON JUNE 20, 1985, THE COMMISSION HELD A PUBLIC MEETING TO RECEIVE COMMENTS FROM A VARIETY OF PARTIES ON THE REPORT'S RECOMMENDATIONS WITH PARTICULAR ATTENTION GIVEN TO THE LIABILITY LIMITATION ISSUE.

SINCE THE SUBMISSION OF THE 1983 REPORT, THERE HAS BEEN A CHANGE IN COMMISSION MEMBERSHIP AND TWO COMMISSIONERS HAVE REVISED THEIR POSITIONS. MY OWN SUPPORT OF THE RECOMMENDATIONS IN THE 1983 REPORT CONTINUES. I HAVE ASKED EACH OF THE COMMISSIONERS TO PREPARE A STATEMENT OF HIS CURRENT POSITION.

THAT CONCLUDES MY PREPARED STATEMENT, MR. CHAIRMAN.

Additional Information on Retrospective Nuclear Liability Insurance Proposed by NRC

April 1985

Office of State Programs
U.S. Nuclear Regulatory Commission

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Additional Information on Retrospective Nuclear Liability Insurance Proposed by NRC

Chapter 1. Introduction and Summary

Since the submittal of the Report to Congress in December 1983, The Price-Anderson Act - The Third Decade, NUREG-0957, questions have been raised on the NRC recommendations relating to possible renewal of or modifications to the Act.

While there have been no written comments received by the NRC staff specifically on the report, views have been expressed in Congressional hearings, meetings with Congressional staff, trade conferences and the press which question the basis for some of the recommendations in the report or suggest changes to the NRC proposals. This paper provides further supporting information to the report in those areas relating to the ability of utilities to pay retrospective premiums as proposed by the NRC. No attempt is made herein to discuss further the more basic policy and equity issues associated with the NRC's proposals.

The recommendation receiving the most attention is to change the retrospective premium assessment from a contingent one-time assessment per accident per reactor to a contingent annual assessment per reactor for as many years as needed, but with a dollar limitation per year. A companion recommendation would raise the assessment from $5 million to $10 million. Industry sources indicate that an annual assessment, if it were applied after an accident, may create economic hardship to utilities and their ratepayers. A second issue raised is that there is an insufficient basis in the report for the choice of the level of $10 million assessment per reactor per year. Finally, two suggestions on alternative methods of assessments are evaluated. One is a suggestion that the assessment be based on reactor size, rather than assessing each reactor $10 million. The other considers relating the assessment to kilowatt hours (kwh) of electricity generated as is done for the Nuclear Waste Fund.

The findings of this additional review are, by chapter:

Ability of Licensees to Pay an Annual Assessment (Chapter 2)

- Reports filed with NRC since 1978 on licensee guarantee of premium payments for the retrospective insurance program show essentially all licensees could have paid a $10 million assessment per reactor within a three-month period.

- Review of financial statements of ten selected utilities for three years show most could pay from internal cash flow, $50 million in assessments within any year.

- Given a $10 million assessment per nuclear plant, assessments represent eleven percent or less of annual construction expenditures for each of these same ten utilities.

- Total operating costs for recently licensed nuclear plants are in the range of $500 million per year per reactor. A $10 million assessment is two percent of that level. If recovered through utility rates, the impact on customers' bills would be less than two percent.

- A review of public utility precedents and practice strongly suggest that retrospective premiums could be recovered in rates on the basis of their being prudent expenditures.

- Representatives of the nuclear utility industry have expressed assurances in the past that unexpected costs can be recovered in rates.

Assessment Increase to $10 Million (Chapter 3)

- Selection of a $10 million assessment per plant is based on:

  a) industry statements that a one-time assessment of $10 million could be manageable.

  b) generation of a total liability fund of up to nearly $1 billion annually - representing substantial public protection.

  c) higher amounts could stress some utilities because an accident probably would trigger other post-loss assessment programs.

Varying Assessments By Reactor Size (Chapter 4)

- If it is decided to vary premiums by reactor size, a system can readily be worked out.

Funding Similar to the Nuclear Waste Fund (Chapter 5)

- Utilities have some experience with the Nuclear Waste Fund which appears to be running smoothly

- Direct adoption of the Waste Fund approach would not maintain the post-loss assessment concepts nor assure timely payments to claimants.

- It may be useful to pursue the idea of using the kwh assessments for the purpose of recovering funds already paid out by licensees.

Chapter 2. Ability of Licensees to Pay an Annual Assessment

Introduction

The various sources of information examined in this chapter suggest that by far the majority of reactor licensees should be able to pay the proposed $10 million per reactor assessment with little difficulty. One source consists of the reports provided by licensees to NRC since 1978 which indicate ability to pay two $5 million assessments per reactor within a three month period. The NRC accepts proof of an adequate internal cash flow, or access to funding, such as a letter of credit or other guarantee approved by the Commission, to fulfill the requirements of Section 140.21. (See also NUREG-0957.)

Another source of information used by the staff is contained in annual reports to stockholders of the licensees. These show, among other items, earnings and cash flow. The staff used these data to calculate the impact of additional assessments on various indicators of the financial condition of the utility. These reports also enable the staff to compare construction expenditures to assessments.

To obtain operating costs of nuclear facilities, the latest reports provided by applicants under the recently repealed regulation pertaining to financial qualifications were reviewed by the staff to obtain operating costs of nuclear facilities. These operating costs are compared to assessments. Also in connection with the financial qualifications rule, a survey of public utility commissions provides insight into the potential for recovery of costs through rate adjustments.

Finally, industry statements are reviewed as indicators of confidence expressed in the ability of utilities to derive sufficient earnings to cover large, unforecasted costs.

1. Utility Internal Cash Flow

In 1977 NRC, pursuant to the 1975 amendments to the Price-Anderson Act, subjected licensees to a retrospective premium of $5 million per reactor per accident. Assessments could be made for no more than two accidents per year; thus the maximum assessment was $10 million. NRC regulations implementing this authority require licensees to show they could pay this assessment within three months of a call. There is thus a manifold conservatism in these requirements. First, it is most unlikely that two accidents would trigger this assessment in a single year. Second, the Act only requires that the assessments be paid within a reasonable time, rather than within three months. Furthermore, by far the majority of nuclear accidents probably will result in no retrospective assessment or only some proportion of the maximum.

The reports filed by licensees under Part 140.21 show that nearly all licensees in all years from 1978 to 1983 could have met a $10 million assessment within three months from internal cash flow* (see Table 1). When licensees choose to guarantee payment by internal cash flow, the information required is (1) the contingent assessment based on number of reactors owned, (2) the projected internal cash flow of the company for the current year, and (3) the actual internal cash flow for the past year. Of the more than 200 licensee-years shown in this table, only six cases occur where letters of credit are used totally or partially in place of internal cash flow. These are for Consumers Power in 1978 and 1983, Omaha Public Power District in 1978, Power Authority of New York in 1978 and 1979, and Toledo Edison in 1980.**

It has been noted that annual payments on these assessments would reduce other important utility objectives such as the ability to fund new construction. While true, this comment must be viewed in a broader perspective. First, licensees have successfully provided evidence to

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* Except as noted, the definition of internal cash flow used by NRC is equivalent to the standard accounting definition. It is derived by adding retained earnings, depreciation and amortization, deferred income taxes and investment tax credits (these are deducted if, for the year in question, they are negative) and deducting allowances for funds used during construction (AFUDC). The standard accounting definition would also include dividends paid to stockholders. Such dividends were excluded by NRC in view of the nature of investment in utility stocks. The objective of such investment is usually oriented much more to receiving a steady stream of income rather than speculative growth. Utilities are reluctant to reduce or skip dividends given the traditional objectives of their stockholders.

** For example, reading this table for the first entry, Alabama Power and Light Company in 1978 had a contingent liability of $10 million. As evidence that it could meet this requirement within three months, the company projected an average $29.1 million internal cash flow per quarter and showed that its cash flow was $10.3 million per quarter for 1978.

NRC since 1978 that they could make a $10 million payment within a three-month period. Second, $10 million per reactor is a relatively insignificant proportion of most utilities' annual income and expenditure levels as well as sources and uses of funds. Table 2 summarizes the effect on measures of earnings and cash flow of three hypothetical levels of retrospective assessments ($10 million, $20 million and $50 million) on 10 nuclear utilities selected for size and geographic variation.* This table shows that for most of these utilities even $50 million in assessments for each of the three years evaluated could be paid from internal cash flow. Note that year-to-year variations in earnings and cash flow, in several instances, substantially exceed $10 million per reactor.

Third, much of utility construction is financed from new security issues rather than internal cash flow. As Table 3 shows, $10 million per reactor is, in most instances, a small proportion of annual utility plant construction. The largest relative impact for those utilities listed in this table, if $10 million per reactor were assessed, would have been on Northern States Power in 1981. It would have been assessed

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* Table 2 was derived as part of a continuing analysis of the effect of various retrospective assessments on representative utilities and is being published as part of NUREG-1131. Using Boston Edison as an example, the table shows that in 1981 the company had earnings per share (EPS) of $4.80, interest coverage ratio of 2.43 (defined as interest plus net income, the sum divided by interest) return on common equity (C.E.) of 12.95%, net cash flow of $126.7 million and cash flow per share of $8.99. Since the company owns 1.19 reactors, a $10 million per reactor assessment would equal $11.9 million for the company. This assessment would have resulted in the financial indicators as shown in the second column. A $20 million assessment per reactor would have resulted in the figures shown in the third column, etc. These calculations are then repeated for 1982 and 1983.

$30 million (because it had three reactors) and had construction of $275.5 million. The assessment would have been 11 percent of the size of the construction program. Note that there are substantial year-to-year variations in construction expenditures. There would appear to be greater discretion in construction spending, at least in the short-term, than is true for operating expenses. In addition, utilities typically maintain contingency funds for unforeseen events (such as major storm damage).

2. Utility operating costs

Table 4, summarized from information supplied by applicants as part of a repealed NRC regulation on financial qualifications, shows forecasted operating expenditures for each license application reviewed between 1981 and 1984. Operation and maintenance expenses were estimated to be roughly $100 million per reactor per year compared to the $10 million contingent assessment. (See first line of Table 4.*) Total operating costs, including depreciation and profit, are in the $500 million range per reactor per year. Currently, insurance premiums for both property property and liability are less than two percent of total operating costs, i.e., $2 to $8 million. An assessment of $10 million would add about another two percent to such costs.

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* The first plant shown, Catawba 1, forecasts average operation and maintenance expenses over the 1986-90 time span of $107 million per year. Total annual operating costs average $510 million. The range of total operating costs over the 1986-90 period are from $490 to $544 million, a $54 million difference.

Interestingly, the forecasted range of high and low total operating costs for this span of years for each of these plants is $50 million or more. Thus a $10 million additional cost is a fraction of expected total cost variation.

For some perspective, it may be useful to show the impact on residential utility customers if the assessment were recovered through utility rates rather than absorbed by the utilities. Assume a household with a $50 per month electric bill ($600 per year).* Also assume that an assessment is made on a utility whose only generating capacity is a single nuclear plant and whose total utility operating expenses equal the total operating expenses of that plant -- say, $500 million (see Table 4). In such an extreme hypothetical case, designed to weight the assessment for the heaviest impact, the $10 million assessment would increase operating costs by two percent. This hypothetical case ignores not only other generating costs but also other operating costs including transmission and distribution which would attenuate the impact of the assessment. This household would have to pay an additional two percent or $1 per month if all costs of the assessment were passed on to customers.**

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* The average residential annual electric bill in the U.S. in 1981 was $513. Statistics of Privately Owned Electric Utilities, 1981 (Classes A and B Comparisons), U.S. DOE, Energy Information Administration, June 1983, p. 29.

** In remarks before the Energy Subcommittee of the National Governors' Association on April 1, 1985, a representative of Northeast Utilities indicated that a $10 million assessment would be estimated to lead to an increase of $10 per year in the average residential annual electric bill for that utility of $734.

3. Recovery of assessments through utility rates.

Notwithstanding this analysis on impact on residential customers if the assessment were collected through rates, none of the material on internal cash flow considered whether the assessment could be expected to be recovered through rate increases to utility customers. To obtain an understanding of how assessments might be treated by State public utility regulatory commissions (PUCs), we reviewed responses from FERC and PUCs to a survey conducted by the National Association of Regulatory Utility Commissioners (NARUC) supplemented by visits by NRC staff to FERC and to selected PUC staffs.* The responses, which are discussed below, illustrate generally how rate requests to finance costs expended to assure safe operation of nuclear power plants are handled.

FERC and State PUCs are charged with the responsibility of assuring that utilities have the opportunity to charge rates which are sufficient to cover all operating expenses and capital costs prudently incurred for the provision of adequate, safe and reliable electric service (Federal Power Commission v. Hope Natural Gas Co., 320 U.S. 519 (1944)). Unregulated utilities have an even greater assurance of recovering their costs since they set their own rates.

In responding to the NARUC questionnaires, most of the PUCs stated (a) that costs to meet NRC safety requirements had never been disallowed in rates; and/or (b) that amounts to cover NRC requirements are a part of operation and maintenance expenses used to determine the overall revenue requirements of the company to be recovered through rates. Some of the questionnaires and most of the visits to PUCs indicated that specific NRC safety requirements are viewed by the PUCs as absolute legal requirements that must be met by the utilities and that all prudent expenditures to that end are recoverable through rates. The PUCs stated in the visits that any PUC action contrary to these Federal requirements (such as making it difficult for a utility to meet nuclear, safety-related operating costs) would be illegal and would not be contemplated or tolerated by the PUC. The visits indicated a clear PUC recognition of exclusive NRC authority in the nuclear safety area and of the need for adequate funding through revenues to carry out Federal requirements for operating plants.

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* This work was done in 1984 in connection with the Commission's rulemaking in financial qualifications.

There is substantial evidence to support the proposition that the cognizant State PUC will allow the nuclear utility to recover all reasonable costs of complying with NRC requirements. Maintaining proper, adequate insurance in force is considered good business practice. Reasonable premiums for proper, adequate insurance are normally passed through to a utility's customers through rates. If the insurance is required by regulation, such as nuclear power plant property insurance under NRC regulation, or required by statute, such as public liability insurance under the Price-Anderson Act, there is additional support for passing the premiums on to ratepayers.

Since Price-Anderson coverage incorporates the only public liability insurance available for nuclear power plants, a utility has no choice but to abide by the requirements thereunder including the possible, eventual payment of retrospective premiums. It seems that only if a more economical coverage were available would the PUC have precedent to justify disallowance of the incremental cost of the more expensive coverage. One hypothetical rationale that a PUC might use to disallow the recovery of retrospective premiums is that such expenditures are not necessary to the safe operation, maintenance or decommissioning of the plant or plants owned by the utility it regulates. Such a rationale would be unorthodox and might prove indefensible if challenged because the nuclear utility must abide by the requirements of Price-Anderson, including the payment of retrospective premiums. In addition, as described above, prudence of the expenditure is a major factor that PUCs use in allowing pass-through of expenses to customers. It seems logical that utility compliance with a federally mandated nuclear insurance program including the payment of required premiums would be considered a prudent utility action by the cognizant PUC.*

Thus, the policy and history of PUC rate regulation suggests that retrospective premiums should reasonably be passed on to customers. What cannot be foreseen are political, public and possibly economic pressures in some future circumstance that might lead a PUC to deny a utility the right to recover such premiums from its customers.

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* It is a condition of every power reactor license that the licensee have and maintain "financial protection" and, both in statute and regulation, the assessment feature of nuclear liability insurance is a mandatory portion of such financial protection for power reactors larger than 100 MWe.

Experience shows that it is entirely reasonable for a utility to expend funds for a purpose that is required by government, and to recover that expense from customers. But experience also shows that PUC decisions sometimes deviate from established precedents.

4. Assurances from utility industry on funding capability

Another insight into the impact on utilities and the potential for recovery of costs through rate adjustments is provided through various utility statements. Utilities or their representatives have made statements in response to various NRC rulemaking actions related to the general area of financial assurance.

One comment from the Edison Electric Institute (EEI), for example, stated:

> Moreover, when necessary, the electric utility industry has been able to finance large investments to backfit operating nuclear power plants which were not anticipated when they obtained their operating licenses. As indicated above, as of August 1982 electric utilities spent over $3 billion to backfit 41 power reactors which had received operating licenses between 1970 and 1978 and expected to spend another $1.15 billion (in 1982 dollars) to complete additional backfits. These factors testify to the ability of electric utilities to continue to finance large unplanned capital investments relevant to the safe operation of nuclear power plants.

A footnote to the comment stated:

> Of course the ability of electric utilities to fund the operation of nuclear power plants is not unlimited. Expenditures for safety related measures must be prudent, i.e., necessary measures should be achieved in a cost-effective, not wasteful, manner and unnecessary measures should be avoided.

A law firm commenting on behalf of a number of utilities, submitted a National Economic Research Associates (NERA) study which states that in 1982, nuclear operation and maintenance (O&M) expenses (excluding fuel but including insurance premiums) represented less than three percent of utility revenues, while total utility (nuclear and non-nuclear) O&M (excluding fuel but including insurance premium) costs represented an average of about 20 percent of utility revenues.

In another Commission proceeding which considered financial requirements to assure safe decommissioning of nuclear power plants, the Utility Decommissioning Group, on behalf of EEI and several individual nuclear utilities, argued for the ability of regulated utilities to deal with the financial stress associated with decommissioning:

> Even if one assumes that a premature decommissioning will occur, there are a large number of NRC licensees which should be deemed to be financially qualified to decommission notwithstanding that an early funding option is not adopted. [Decommissioning is estimated to cost $100 million or more for typical reactors.] For example, if an entity with several billion dollars in capital assets is involved, it is very likely that it could fund the decommissioning effort (even if costs were several factors higher than those projected for routine decommissioning).
>
> An examination of the framework for the economic regulation of investor-owned electric utilities, when viewed together with the absolute necessity of the product (electricity) marketed by the industry, demonstrates that there is a high level of assurance that electric utilities will remain economically healthy. An examination of the history of the economic performance of the electric utility industry also solidly supports this conclusion.
>
> In *Bluefield Water Works and Improvement Company v. Public Service Commission of West Virginia*, 202 U.S. 6996 (1923), the Supreme Court established the basic test for ratemaking, as follows:
>
> > "Rates which are not sufficient to yield a reasonable return on the value of the property used,

> at the time it is being used to render service, are unjust, unreasonable and confiscatory, and their enforcement deprives the public utility company of its property in violation of the 14th amendment (262 U.S., at 690)."

Of course, these principles of ratemaking do not allow a utility to operate irresponsibly and do not "guarantee" a satisfactory rate of return. Nevertheless, they do provide electric utilities with a remedy if the principles are not followed, and thus considerable assurance that the utilities will remain financially viable in the long-term through the recovery of just and reasonable rates. As discussed in the Bluefield case, the taking clause of the Fifth Amendment and the due process clauses of the Fifth and Fourteenth Amendments provide one basis for court challenge to inadequate rates. This constitutional safeguard is summarized by one authority, as follows:

> "The constitutional prohibition against confiscation bars a regulatory authority from imposing rates which produce no income; it is not a mere prohibition against taking title to property without due process and proper compensation. The right to earnings is as much a property right as the right to the property which can produce the earnings. G. E. Turner, Trends and Topics in Utility Regulation (1969), p. 530."

Further, the NRC staff should not view possible short-term difficulties in raising construction capital by some utilities as an indication, ipso facto, that those utilities will experience difficulties in recovering reasonable rates for projects already in service. Once a project is constructed, it may be placed in the rate base and a reasonable rate of return may be earned on it.

The NRC has based a number of decisions on assurances from utilities and their State regulators, examples of which are cited above, that necessary construction, operating and decommissioning funds would be forthcoming. A relatively modest annual contingent assessment of $10 million per reactor would, therefore, appear not to greatly stress utilities in light of these assurances.

Chapter 3. Basis for Selecting $10 Million Per Reactor Per Year

Commenters have criticized the Commission's report to Congress for not giving an adequate basis for choosing $10 million per reactor per year. The NRC staff's basis for this figure is three-fold. First, EEI has stated that a retrospective assessment of $10 million per reactor per accident would be manageable.* Although this referred to a one-time assessment, we believe, for reasons shown in Chapter 2, that year-to-year assessments would also be manageable.

Second, from the point of view of public protection, an assessment of $10 million per reactor after a nuclear incident would yield in the first year up to $1.08 billion ($160 million in primary insurance and $920 million in secondary (post-assessment) insurance) with the current number of licensed reactors. This amount, followed by up to $920 million available each year as needed, appears to be adequate to cover all but the most highly improbable accidents. Very likely, an accident would result in no retrospective assessment, i.e., would result in liability claims of $160 million or less. A desirable feature would be a review, perhaps every five years, to assess whether $10 million continues to be appropriate in light of inflation and other unforeseen developments.

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* Testimony of Steve C. Griffith, Jr., Senior Vice President, General Counsel, Duke Power Co., before Subcommittee on Energy and the Environment, Committee on Interior and Insular Affairs, House of Representatives, Washington, D.C., June 11, 1984, p. 189 (p. 12 of testimony).

Third, Chapter 2 and the data in Tables 1 through 4 show that this level of assessment can be made without significant adverse impact on the financial condition of most nuclear utilities, even assuming no immediate recovery through increased rates. Keeping in mind that there are also other retrospective assessment insurance coverages (i.e., for property insurance of the reactors themselves and purchased power insurance) placed on nuclear utilities, and that an event triggering a call for one type of assessment may result in calls for the others, it did not seem prudent to go above the $10 million per year level. (See NUREG-0957, Appendix H.)

Chapter 4. Varying Assessments by Reactor Size

The next issue relates to the feasibility of a suggestion that the assessment be based on reactor size rather than the same fee being assessed for every reactor. Methods to accomplish this can be readily developed as the following two approaches show.

Approach 1: Set Premiums to Obtain Initial Total Assessments

One approach is to set an initial objective to obtain $1 billion in total retrospective premiums per year if 100 reactors are assessed and then increase coverage as additional reactors are licensed keeping the same fee schedule. Premiums would be set on the basis of dollars per megawatt. The premiums per reactor would then vary by size and would be set initially to obtain this total amount. (Price-Anderson indemnity fees were related to thermal megawatt (MWt), prior to November 1982, so this scheme uses the same basis.)

Data to calculate premiums per reactor were based on all operating reactors above 100 MWe plus reactors scheduled to have licenses by the end of 1986. By the end of 1986, a recent construction schedule calls for 114 reactors to have operating licenses.* These plants will have a total of 312,366 MWt (102,246 MWe) capacity.

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* Letter from N. J. Palladino, Chairman, NRC, to the Honorable Thomas Bevill, Chairman, Subcommittee on Energy and Water Development, Committee on Appropriations, U.S. House of Representatives, February 1, 1985.

To get $1 billion per year from 100 reactors, the average size reactor must be assessed $10 million. The average reactor size (expected by the end of 1986) will be 2740 MWt.

Assessment per MWt would be:

$$\frac{\$10\text{ million}}{2740\text{ MWt}} = \$3650/\text{MWt}$$

The largest reactor in MWt is Grand Gulf, at 3833 MWt (1250 MWe). Using this approach, the maximum annual assessment for it would be:

$3650/MWt X 3833 MWt = $13,990,450, or about $14 million.

Given this approach, we could set a lower bound so that no reactor paid less than $5 million annually (the current retrospective premium). Reactors less than 1370 MWt (or approximately 450 MWe) would pay $5 million.

There are five plants which would pay the minimum annual premium:

Plant	MWt	(MWe)
Dresden #1	700	(200)
San Onofre #1	1347	(430)
Fort St. Vrain	842	(333)
Indian Point #1	615	(265)
Yankee Rowe	600	(175)

Forty-eight plants would be assessed premiums between $5 million and $10 million.

Some examples of maximum assessment are:

Plant	MWt	Maximum Annual Assessment
Fort Calhoun	1420	$5,183,000
Oyster Creek	1930	7,044,500
Beaver Valley #2	2660	9,709,000

The above assessment on these 114 plants would generate approximately $1.1 billion, (312,366 MWt X $3650/MWt = $1.14 billion).

The assessment per MWt could be rounded off, for example, to $3600 or $3700. Also, this same approach could be used, based on electrical megawatts rather than thermal megawatts.

The above calculations are based on the assumption that the annual assessment is the maximum allowed, i.e., that it is necessary to make assessments totalling some $1 billion per year from 100 operating reactors. If instead, the accident severity were such that something less, say, $200 million was needed per year, then each assessment calculated above would be proportionately lower, specifically one-fifth of the figures shown above. Accordingly, Grand Gulf would be assessed $2.8 million rather than the $14 million and the plants less than 1370 MWt would be assessed $1 million per year, rather than $5 million.

Approach 2: Preselect a Certain Size Plant For a $10 Million Maximum Assessment

Another approach is to vary assessments by size but choose a certain size plant, say, 1000 MWe, to be liable for a $10 million assessment. In thermal megawatts this plant will average 3049 MWt. The assessment per MWt would be:

$$\frac{\$10 \text{ million}}{3049 \text{ MWt}} = \$3279/\text{MWt}$$

In case of a maximum annual assessment, this would generate about $1 billion per year assuming the above 114 reactors, as follows:

$$\$3279/\text{MWt} \times 312{,}366 \text{ MWt} = \$1{,}024{,}248{,}114/\text{yr}.$$

Again, this figure could be rounded and a minimum premium could be set if so desired.

In this case, if a $5 million minimum were set, all reactors 1525 MWt or less would be subject to the minimum. Four reactors in addition to those under the first approach would pay the minimum. Those are:

Plant	MWt	(MWe)
Fort Calhoun	1420	(457)
Ginna	1520	(490)
Point Beach #1	1518	(497)
Point Beach #2	1518	(497)

In general, desired total assessments can be achieved using this approach by properly selecting the size of reactor which is assessed $10 million. For example, assessing $10 million on an 800 MWe (2440 MWt) plant, rather than 1000 MWe, would yield $1.25 billion per year.

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Chapter 5. A Proposal for Funding Similar to the Nuclear Waste Fund

This chapter considers an alternative payment method to the fixed annual assessments for meeting post-loss liability claims. An industry source* has suggested that an approach similar to funding the Nuclear Waste Fund** be used, rather than the $10 million per year per reactor. The Waste Fund receives revenue from an adjustable ongoing fee charged quarterly for all electricity generated by commercial nuclear facilities beginning April 7, 1983, as well as a one-time fee for waste generated prior to this enactment. The current fee is 1.0 mill per kwh and is projected to be sufficient to offset estimated total system life-cycle costs.

The Department of Energy analysis of the Fund forecasts yearly deposits of from $329 million in 1984 to $558 million in 1990. The increase is due to the growing levels of nuclear generated electricity.*** If this system were proposed to be used to generate funds for public liability claims equal to the reference of $1 billion in assessments per year, an assessment of 3.39 mills per kwh would have been needed in 1983, given the 295 billion kilowatt hours of nuclear generation.*

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* Nucleonics Week - February 28, 1985, p. 81:
"I don't see the industry going much higher than $10 million per reactor," according to Griffith of Duke Power Co. "But there are other ways of going about raising the amount of money available--for instance, a fee (on nuclear-generated electricity) like that established for the (nuclear) waste fund," he said. "I think the industry would go for something like that," Griffith said.

** Implemented pursuant to the Nuclear Waste Policy Act of 1982.

*** Nuclear Waste Fund Fee Adequacy: An Assessment, DOE/RW-0020, U.S. DOE, February 1985.

There are certain useful features of the proposal which may be worth while considering.

- o The fund could be assessed by the Federal government, thereby alleviating expressed uncertainty by utilities of whether state PUCs would allow this expense in rates.

- o As with the NRC proposal, utilities with greater nuclear power generation would be assessed more in fees than those with less nuclear power.

- o There is experience with this system through the Waste Management Fund which appears to be operating smoothly.

- o Provisions can be made to adjust the assessment up or down, depending on funding needs to satisfy claims.

Potential problems are evident with this system, some of which could be alleviated by making modifications to the Waste Fund approach for this purpose.

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* 1984 Annual Data Summary Report, National Electrical Reliability Council, (NERC), 1984-1993, p. 5.

- Unless it were implemented only after an accident, the concept of post-loss assessment would be lost. A post-loss assessment concept is highly desirable for low-probability events where the need for funds is very difficult to predict.

- Revenue for the fund would be generated slowly and would depend on electrical output which would be less likely to match the pace of funding needs for satisfying claims.

- The plant which had the accident of the magnitude to initiate this program would not generate electricity, probably permanently. Thus no kwh assessment could be made on it. (In contrast, TMI-2 continues to be a potential contributor of its pro rata share of the retrospective assessment).

- The NRC may order temporary or permanent shutdown of some other reactors because of generic relationships with the plant having the accident. Thus no kwh assessment could be made on these plants.

There are ways around most of these problems although the impact of the assessments would shift.

- Coupling of the NRC proposal and elements of this proposal could be done. To do this the assessment would be made as in the NRC proposal. Then utility recovery of payments by the licensee would be accomplished by a Federally-enacted kwh assessment similar to the Nuclear Waste Fund. Thus the kwh assessment would begin only after an accident when utilization of the retrospective premium was contemplated by the nuclear insurance pools. Compensation of the public for claims need not depend on the amount of electricity generated. Uncertainty over PUC approval would be alleviated.

- Assessments could be made on all electricity generated by nuclear utilities rather than just the electricity generated by these utilities from nuclear reactors. This would alleviate the problem of unavailability of nuclear plants after an accident to generate electricity (and revenue). In this case a much lower mills-per-kwh assessment could be made, although the collections from all utilities combined would be the same. However, a greater burden would be placed on utilities which have a small proportion of their generating capacity in nuclear plants thus exacerbating the question of equity.

It appears that adopting elements of the kwh assessment as indicated could be feasible while preserving the objectives of public protection as stated in the NRC recommendations.

Chapter 5. Conclusions

This paper has presented further supporting information for the recommendation that retrospective premiums under the Price-Anderson Act be set at a maximum of $10 million per reactor per year. It is concluded that this assessment would not place unusual financial stress on most licensees. Utility ratepayers would experience very small rate increases if this cost were passed through to them. A variation of the $10 million assessment according to reactor size can readily be established, if desired. The suggestion to relate licensee recovery of assessment costs to kwh of electricity produced, drawing on the concept of the Nuclear Waste Fund may have merit.

Table 1
Utility Cash Flow Analysis 1978-1983
($ in Millions)

Utility*	1978	1979	1980	1981	1982	1983	Designations**
Alabama	10.0	10.0	20.0	20.0	20.0	20.0	R
Power & Light Co.	29.1	28.0	34.7	40.8	58.7	100.4	P
	10.3	29.2	44.8	50.7	95.6	113.8	A
Arkansas	20.0	20.0	20.0	20.0	20.0	20.0	R
Power & Light Co.	20.1	20.6	20.1	26.6	25.2	43.1	P
	21.1	22.5	23.5	24.0	28.7	53.5	A
Baltimore Gas	20.0	20.0	20.0	20.0	20.0	20.0	R
& Electric Co.	33.0	33.9	43.2	46.0	54.3	59.0	P
	32.9	43.2	56.0	47.8	57.2	64.8	A
Boston	11.9	11.9	11.9	11.9	11.9	11.9	R
Edison Co.	20.1	19.1	20.4	23.6	38.0	34.0	P
	19.4	19.8	19.6	29.2	25.4	38.5	A
Carolina Power	30.0	30.0	30.0	30.0	30.0	30.0	R
& Light Co.	54.0	44.2	33.7	54.3	61.8	127.8	P
	46.6	41.2	38.1	57.1	152.7	133.2	A
Cleveland Electric	5.13	5.13	5.13	5.13	5.13	5.13	R
Illuminating Co.	7.4	10.6	13.4	12.3	6.6	18.8	P
	12.7	13.0	10.4	17.2	25.0	32.9	A
Commonwealth	65.0	65.0	65.0	65.0	65.0	85.0	R
Edison Co.	70.2	65.0	70.0	72.0	85.0	120.0	P
	85.8	40.1	64.7	78.0	68.2	134.8	A
Consolidated	20.0	20.0	20.0	20.0	20.0	20.0	R
Edison Co.	61.5	62.0	67.0	62.5	74.5	81.2	P
	77.8	61.0	62.1	112.0	76.0	105.3	A
Consumers	10.0	10.0	10.0	10.0	10.0	10.0	R
Power Co.	Letter of Credit	30.1	15.9	14.9	14.2	10.04***	P
		19.6	1.7	23.4	6.7	Letter of Credit	A
Duke Power	30.0	30.0	30.0	30.0	40.0	50.0	R
Co.	51.5	65.0	46.0	64.0	48.5	83.5	P
	75.0	59.0	56.0	64.6	58.7	63.2	A

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* Single asset utilities, such as the Yankee Companies which have a unique financial structure, are not included in this analysis.

** Required cash flow (R) is established at $10 million per operating reactor per quarter. Cash flow projections (P) are based on average cash available to a company by quarter after all operating expenses, taxes, interest charges, and dividends have been paid. Actual average quarterly cash flow (A) is is recorded for each year based on data received the following year.

*** Includes a bank line of credit of $5.0 million.

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Table 1 (continued)
Utility Cash Flow Analysis 1978-1983
($ in Millions)

Utility	1978	1979	1980	1981	1982	1983	Designations
Duquesne Light Co.	4.75	4.75	4.75	4.75	4.75	4.75	R
	17.5	16.1	18.5	14.0	17.6	20.5	P
	14.8	14.9	14.6	21.6	15.5	22.5	A
Florida Power Corp.	10.0	10.0	10.0	10.0	10.0	10.0	R
	34.9	31.2	34.5	40.3	31.7	52.3	P
	31.2	32.4	37.6	43.8	24.8	53.6	A
Florida Power & Light Co.	30.0	30.0	30.0	30.0	40.0	40.0	R
	74.5	90.3	76.0	86.0	102.7	124.0	P
	81.7	73.9	83.1	89.4	136.5	118.0	A
Georgia Power Co.	10.02	10.02	10.02	10.02	10.02	10.02	R
	30.0	88.7	42.0	82.2	76.7	30.8	P
	-	88.7	42.0	-	46.5	122.5	A
Indiana & Michigan Power Co.	20.0	20.0	20.0	20.0	20.0	20.0	R
	21.4	21.7	20.0	28.2	27.5	22.0	P
	22.0	22.3	29.4	29.7	24.0	-	A
Iowa Electric Light & Power Co.	7.0	7.0	7.0	7.0	7.0	7.0	R
	7.7	7.5	9.1	9.0	10.1	11.2	P
	7.9	8.1	7.6	11.4	10.5	10.7	A
Iowa-Illinois Gas & Electric Co.	5.0	5.0	5.0	5.0	5.0	5.0	R
	6.2	12.9	11.1	14.1	14.0	13.5	P
	8.17	11.2	10.9	11.9	11.6	11.1	A
Jersey Central Power & Light Co.		15.0	15.0	15.0	15.0	15.0	R
		46.7	35.2	42.5	47.0	48.0	P
		44.8	47.0	50.3	45.0	34.5	A
Metropolitan Edison Co.		10.0	10.0	10.0	10.0	10.0	R
		48.9	35.2	15.3	30.2	26.0	P
		44.7	7.4	12.2	18.0	28.5	A
Niagara Mohawk Power Corp.	10.0	10.0	10.0	10.0	10.0	10.0	R
	35.0	21.8	32.3	38.9	40.4	38.9	P
	25.5	26.3	30.3	36.5	46.4	46.7	A
Northeast Utilities*	23.1	23.1	23.1	25.8	25.8	25.8	R
	32.2	-	26.4	28.8	39.9	69.8	P
	25.8	25.2	38.3	42.5	62.3	64.4	A
Northern States Power Corp.	30.0	30.0	30.0	30.0	30.0	30.0	R
	50.0	65.4	49.5	56.4	80.5	85.0	P
	49.8	62.2	48.2	51.4	79.4	103.0	A

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* Northeast Utilities is a holding company consisting of Northeast Nuclear Energy Company, Connecticut Light and Power Company, Western Massachusetts Electric Company and, until 1982, Hartford Electric Light Company.

Table 1 (continued)
Utility Cash Flow Analysis 1978-1983
($ in Millions)

Utility	1978	1979	1980	1981	1982	1983	Designations
Omaha Public	10.0	10.0	10.0	10.0	10.0	10.0	R
Power District	Letter of	10.4	10.2	10.9	12.6	13.5	P
	Credit	10.1	12.5	12.0	12.1	17.4	A
Philadephia	12.75	12.75	17.0	17.0	17.0	17.0	R
Electric Co.	37.5	44.6	26.7	21.0	36.7	22.2	P
	44.9	11.1	46.5	44.2	64.2	33.8	A
Power Authority	10.0	10.0	10.0	10.0	10.0	10.0	R
of New York	Letter	Letter	41.0	27.5	31.26	38.87	P
	of	of	39.1	34.1	31.0	17.1	A
	Credit	Credit					
Public Service	10.0	10.0	10.0	10.0	10.0	10.0	R
Co. of Colorado	15.0	27.5	19.3	30.6	69.0	38.4	P
	13.5	13.9	19.0	27.0	74.5	81.3	A
Public Service	12.8	12.8	17.0	17.0	17.0	17.0	R
Electric & Gas Co.	65.2	78.1	60.7	69.8	125.5	79.8	P
	84.4	41.6	70.1	90.1	142.3	63.6	A
Rochester Gas	10.0	10.0	10.0	10.0	10.0	10.0	R
& Electric Co.	10.04	10.9	10.5	14.3	13.5	21.7	P
	6.4	8.1	10.8	22.5	11.7	23.2	A
Sacramento Municipal	10.0	10.0	10.0	10.0	10.0	10.0	R
Utility District	14.9	16.8	16.7	20.0	22.5	31.0	P
	15.7	16.8	18.8	19.1	24.5	30.5	A
Southern California	10.0	10.0	10.0	10.0	20.0	30.0	R
Edison Co.	21.5	21.0	13.2	23.0	20.5	-	P
	61.3	62.7	23.8	42.6	48.0	-	A
Tennessee Valley	30.0	30.0	30.0	40.0	40.0	60.0	R
Authority	50.5	68.6	64.0	79.5	108.0	79.5	P
	36.0	63.4	59.5	61.4	110.0	128.0	A
Toledo Edison Co.	4.86	4.86	4.86	4.86	4.86	4.86	R
	8.3	9.38	4.8*	6.7	6.2	7.5	P
	9.3	8.36	5.1	1.7	11.1	5.8	A
Virginia Electric	30.0	30.0	40.0	40.0	40.0	40.0	R
& Power Co.	37.0	53.5	46.9	63.7	107.1	105.6	P
	31.6	38.8	83.4	73.9	58.5	100.2	A

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* Includes a bank line of credit of $537,000.

Table 1 (continued)
Utility Cash Flow Analysis 1978-1983
($ in Millions)

Utility	1978	1979	1980	1981	1982	1983	Designations
Wisconsin Electric Power Co.	20.0	20.0	20.0	20.0	20.0	20.0	R
	29.0	30.75	28.75	32.0	42.5	46.5	P
	29.8	29.5	32.25	38.5	39.5	43.0	A
Wisconsin Power & Light Co.	4.2	4.2	4.2	4.2	4.2	4.2	R
	13.6	13.4	14.9	16.9	15.7	-	P
	12.5	13.1	13.7	16.6	16.5	-	A
Wisconsin Public Service Corp.	4.1	4.1	4.1	4.1	4.1	10.0	R
	13.1	14.0	15.4	14.4	18.2	19.2	P
	14.0	15.2	16.1	15.8	19.1	22.0	A

Table 2

Impact of Various Assessments

	1981 BASE	1981 10x=	1981 20x=	1981 50x=	1982 BASE	1982 10x=	1982 20x=	1982 50x=	1983 BASE	1983 10x=	1983 20x=	1983 50x=
BOSTON EDISON (1.19 Reactors)		=11.9M	=23.8M	=59.5M		=11.9M	=23.8M	=59.5M		=11.9M	=23.8M	=59.5M
EPS ($)	4.80	3.87	2.94	0.15	3.81	3.15	2.47	0.47	3.60	2.91	2.21	0.12
X Interest	2.43	2.17	1.91	1.15	1.92	1.78	1.63	1.19	2.08	1.92	1.75	1.26
Ret. on C.E. (%)	12.95	10.4	7.9	0.4	10.25	8.5	6.6	1.3	11.0	8.9	6.7	0.4
Net C.F. ($ mill.)	126.7	113.6	100.4	61.1	100.3	90.7	81.0	52.1	121.0	110.7	100.3	69.2
C.F./Share ($)	8.99	8.06	7.12	4.33	6.96	6.30	5.62	3.61	8.12	7.43	6.73	4.64
COMMONWEALTH. ED. (7.5 Reactors, 6.5 in 1981)		=65M	=130M	=325M		=75M	=150M	=375M		=75M	=150M	=375M
EPS ($ mill.)	3.06	2.49	2.20	0.81	3.75	3.32	2.89	1.60	4.39	4.00	3.60	2.42
X Interest	1.83	1.71	1.64	1.37	2.01	1.91	1.81	1.52	2.31	2.20	2.10	1.80
Ret. on C.E. (%)	10.9	8.9	7.8	3.2	12.9	11.4	9.9	5.5	15.0	13.7	12.3	8.3
Net C.F. ($ mill.)	122.0	56.9	22.6	-126.9	268.2	210.3	152.2	-22.1	646.8	585.0	522.2	335.2
C.F./Share ($)	1.06	0.50	0.20	-1.10	1.99	1.56	1.13	-0.16	4.09	3.70	3.30	2.12
CONSUMERS POWER (1 Reactor)		=10M	=20M	=50M		=10M	=20M	=50M		=10M	=20M	=50M
EPS ($)	3.16	2.98	2.80	2.27	3.16	2.99	2.83	2.35	2.86	2.74	2.62	2.27
X Interest	1.96	1.92	1.88	1.76	2.07	1.96	1.93	1.81	2.07	2.04	2.01	1.92
Ret. on C.E. (%)	9.14	8.6	8.1	6.6	8.6	8.2	7.8	6.4	9.0	8.7	8.3	7.2
Net C.F. ($ mill.)	128.8	120.6	110.3	79.4	114.2	103.7	93.3	62.2	70.2	60.1	49.8	19.0
C.F./Share ($)	2.22	2.08	1.90	1.37	1.78	1.62	1.45	0.97	0.81	0.69	0.57	0.22

Key: EPS = Earnings Per Share
X Interest = Interest Coverage Ratio
Ret. on C. E. = Rate of Return on Common Equity
Net C. F. = Net Cash Flow
C.F./Share = Cash Flow Per Share

Table 2 (cont'd.)
Impact of Various Assessments

	1981 BASE	1981 10x=	1981 20x=	1981 50x=	1982 BASE	1982 10x=	1982 20x=	1982 50x=	1983 BASE	1983 10x=	1983 20x=	1983 50x=
DUKE POWER (5 Reactors, 4 in '81 & '82)		=40M	=80M	=200M		=40M	=80M	=200M		=50M	=100M	=250M
EPS ($)	3.19	2.78	2.37	1.14	3.59	3.23	2.87	1.80	3.70	3.20	2.69	1.18
X Interest	2.38	2.23	2.08	1.64	2.57	2.44	2.31	1.91	2.57	2.39	2.21	1.66
Ret. on C.E. (%)	13.2	11.5	9.8	4.7	14.1	12.7	11.3	7.1	14.1	12.2	10.2	4.5
Net C.F. ($ mill.)	269.5	233.8	198.0	90.6	344.2	310.9	277.5	177.0	660.2	609.9	599.6	408.9
C.F./Share ($)	3.09	2.68	2.27	1.04	3.67	3.32	2.96	1.89	6.63	6.12	5.62	4.11
DUQUESNE (.475 Reactors)		=4.75M	=9.5M	=23.75M		=4.75M	=9.5M	=23.75M		=4.75M	=9.5M	=23.75M
EPS ($)	2.06	1.97	1.88	1.62	1.95	1.88	1.81	1.59	2.10	2.04	1.98	1.80
X Interest	2.14	2.08	2.04	1.93	2.05	2.02	1.98	1.89	2.23	2.20	2.17	2.08
Ret. on C.E. (%)	8.9	8.6	8.2	7.1	8.8	8.5	8.2	7.2	10.7	10.4	10.1	9.2
Net C.F. ($ mill.)	86.4	82.8	79.2	68.4	53.2	49.7	46.1	35.4	62.8	58.4	55.7	45.0
C.F./Share ($)	2.07	1.98	1.89	1.63	1.10	1.03	0.96	0.73	1.08	1.00	0.95	0.77
FLORIDA P&L (3.85 Reactors, 3 in '81 & '82)		=30M	=60M	=150M		=30M	=60M	=150M		=38.5M	=77M	=192.5M
EPS ($)	4.16	3.60	3.04	1.35	5.24	4.72	4.19	2.61	4.76	4.36	3.97	2.77
X Interest	1.99	1.88	1.77	1.43	2.18	2.08	1.98	1.67	2.30	2.21	2.12	1.83
Ret. on C.E. (%)	11.6	10.0	8.5	3.8	13.9	12.5	11.1	6.9	12.2	11.2	10.2	7.1
Net C.F. ($ mill.)	415.1	389.8	364.4	288.3	926.4	900.0	873.4	794.0	571.1	549.1	526.4	459.4
C.F./Share ($)	9.16	8.60	8.04	6.36	18.38	17.86	17.33	15.75	10.14	9.75	9.35	8.16

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Table 2 (cont'd.)
Impact of Various Assessments

	1981 BASE	1981 10x=	1981 20x=	1981 50x=	1982 BASE	1982 10x=	1982 20x=	1982 50x=	1983 BASE	1983 10x=	1983 20x=	1983 50x=
NORTHERN STATES (3 Reactors)		=30M	=60M	=150M		=30M	=60M	=150M		=30M	=60M	=150M
EPS ($)	3.89	3.29	2.68	0.85	4.78	4.20	3.61	1.86	5.60	4.91	4.22	2.14
X Interest	3.03	2.75	2.46	1.61	2.98	2.76	2.54	1.88	3.23	2.98	2.72	1.95
Ret. on C.E. (%)	12.6	10.7	8.7	2.8	14.5	12.7	10.9	5.6	16.3	14.3	12.2	6.2
Net C.F. ($ mill.)	163.6	145.8	128.0	74.5	220.4	202.8	185.2	132.4	419.7	398.6	377.6	314.4
C.F./Share ($)	5.58	4.97	4.37	2.54	7.32	6.74	6.15	4.40	13.81	13.11	12.42	10.34
P.S. COLORADO (1 Reactor)		=10M	=20M	=50M		=10M	=20M	=50M		=10M	=20M	=50M
EPS ($)	1.88	1.73	1.57	1.11	2.11	1.98	1.85	1.45	1.82	1.69	1.56	1.18
X Interest	2.70	2.58	2.46	2.12	2.70	2.61	2.52	2.25	2.53	2.44	2.35	2.07
Ret. on C.E. (%)	11.5	10.5	9.6	6.8	12.7	11.9	11.1	8.7	10.9	10.1	9.4	7.1
Net C.F. ($ mill.)	91.4	84.5	77.5	56.8	197.8	191.5	185.3	166.6	114.3	108.0	101.6	82.6
C.F./Share ($)	2.04	1.88	1.73	1.27	4.21	4.07	3.94	3.54	2.32	2.20	2.07	1.68
SO. CAL. ED. (2.33 Reactors, .8 in '81)		=8M	=16M	=40M		=23.3M	=46.6M	=116.6M		=23.3M	=46.6M	=116.6M
EPS ($)	4.83	4.75	4.67	4.43	5.00	4.79	4.60	4.02	6.21	6.05	5.89	5.41
X Interest	2.81	2.78	2.75	2.68	2.54	2.49	2.44	2.28	2.63	2.59	2.56	2.44
Ret. on C.E. (%)	14.7	13.9	13.7	13.0	14.2	13.7	13.1	11.5	16.2	15.8	15.4	14.1
Net C.F. ($ mill.)	273.8	266.9	260.0	239.3	52.7	34.1	15.5	-40.4	390.1	374.4	358.5	311.0
C.F./Share ($)	3.14	3.06	2.99	2.75	0.54	0.35	0.16	-0.42	3.93	3.77	3.61	3.14

Table 2 (cont'd.)
Impact of Various Assessments

	1981 BASE	1981 10x=	1981 20x=	1981 50x=	1982 BASE	1982 10x=	1982 20x=	1982 50x=	1983 BASE	1983 10x=	1983 20x=	1983 50x=
VEPCO (4 Reactors)		=40M	=80M	=200M		=40M	=80M	=200M		=40M	=80M	=200M
EPS ($)	1.72	1.36	1.00	-0.07	1.86	1.51	1.16	0.13	2.15	1.83	1.52	0.59
X Interest	1.85	1.71	1.58	1.18	1.94	1.80	1.66	1.24	2.14	2.00	1.86	1.46
Ret. on C.E. (%)	9.2	7.3	5.4	-0.4	10.1	8.2	6.4	0.7	11.5	9.8	8.1	3.1
Net C. F. ($ mill.)	245.4	207.7	170.1	57.0	356.7	315.4	274.2	150.4	421.8	382.8	344.4	229.2
C.F./Share ($)	2.34	1.98	1.62	0.54	2.98	2.64	2.29	1.26	3.41	3.09	2.78	1.85

Table 3
Sources of Funds and Spending for Construction
($ in Millions)

Utility	1981 All Sources of Funds	1981 Internal* Cash Flow	1981 Construction	1982 All Sources of Funds	1982 Internal* Cash Flow	1982 Construction	1983 All Sources of Funds	1983 Internal* Cash Flow	1983 Constructio
Boston Edison	136.7	126.7	136.7	136.5	100.3	136.5	151.3	121.0	151.3
Commonwealth Edison	1865.8	122.0	1303.9	1959.1	268.2	1425.8	2116.6	646.8	1440.3
Consumers Power	798.6	128.8	798.6	920.7	114.2	920.7	N.A.	70.2	N.A.
Duke Power	831.6	269.5	645.1	842.5	344.2	589.8	782.7	660.2	535.7
Duquesne Light	343.0	86.4	178.9	395.3	53.2	231.0	413.6	62.8	224.3
Florida Power & Light	1090.1	415.1	678.6	1218.4	926.4	772.3	1603.7	571.1	718.4
Northern States Power	397.6	163.6	275.5	602.8	220.4	291.0	804.9	419.7	347.3
Public Service of Colorado	209.7	91.4	228.1	181.2	197.8	223.5	213.2	114.3	186.8
Southern California Edison	1367.6	273.8	1189.3	1553.6	52.7	1297.0	1331.1	390.1	1171.4
Virginia Electric Power	818.0	245.4	542.3	1121.2	356.2	582.4	1285.5	421.8	547.4

Source: Corporate Annual Reports, generally as reported in Moody's Public Utility Manual, Annual.
* "All Sources of Funds" include "Internal Cash Flow." Also included in "All Sources of Funds" are sale of common and preferred securities and debt.

Table 4

Utility Estimates of Annual Nuclear Plant Operating Costs *
- average of years -
($ in Millions)

Plant	Catawba 1	Catawba 2	Waterford 3	Callaway	Byron 1	Byron 2	Shoreham	Palo Verde 1-3 ave.	Grand Gulf 1
Operation and Maintenance Expenses Includes fuel, maintenance insurance & administration	107	126	69	79	138	145	95	77	105
Property & Liability insurance (included in above)	(4)	(4)	(8)	(8)	(7)	(5)	(6)	(5)	(4)
Depreciation	78	78	102	89	48	34	67	51	92
Taxes	137	139	221	134	145	95	200	67	113
Return (profit)	188	189	309	295	204	132	266	148	246
Total Operating Costs	510	532	701	597	535	406	628	343	556
Range of High & Low Years @ 60 percent c.f. (total operating costs)	490-544	517-559	608-777	406-807	495-582	385-437	606-659	253-431	483-564
Years of Estimates	1986-90	1988-92	1985-89	1985-89	1984-90	1985-91	1983-89	1983-90	1983-89
Date of Information	May 1984	May 1984	May 1984	May 1984	January 1982	January 1982	May 1981	September 1981	July 1981

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* Using all reports received from 1981 to 1984

Table 4 (continued)
Utility Estimates of Annual Nuclear Plant Operating Costs *
- average of years -
($ in Millions)

Plant	St. Lucie 2	Fermi 2	Watts Bar 1	Watts Bar 2
Operation and Maintenance Expenses Includes fuel, maintenance, insurance & administration	65	172	126	136
Property and Liability Insurance (included in above)	(8)	(5)	(3)	(2)
Depreciation	39	101	70	63
Taxes	61	105	0	0
Return (profit)	100	182	0	0
Total Operating Costs	265	560	196	199
Range of High & Low Years @ 60% c.f. (total operating costs)	259-304	539-624	171-218	188-212
Years of Estimates	1983-89	1984-90	1986-90	1988-92
Date of Information	July 1981	April 1981	July 1984	July 1984

* Using all reports received from 1981 to 1984.

NRC STAFF ANALYSIS OF S. 1225

THE PRICE-ANDERSON ACT AMENDMENTS ACT OF 1985

Introduction

The Price-Anderson Act Amendments Act of 1985 (S. 1225) was introduced by Senators Simpson and McClure on May 24, 1985. As described by the Senators in the Congressional Record of that date the bill has four basic objectives:

1. Increase substantially the funds that will be available immediately to compensate the public in the event of an accident.

2. Ensure that the system established for collecting these funds is equitable and efficient.

3. Establish a reliable and efficient mechanism for providing whatever additional funds are required to compensate public liability claims in full should the funds immediately available be exhausted.

4. Ensure that the system established is comprehensive and covers all NRC licensee and contractor activities where there is a substantial risk of public liability from the handling of nuclear materials or the operation of nuclear facilities producing, using, storing or disposing of such materials.

The bill provides for four major changes of the Price-Anderson Act as it applies to NRC reactor licenses and four major changes with respect to DOE contractor activities.* With respect to NRC reactor licensees the bill would:

1. Direct NRC to carry out formal rulemaking to be completed within 12 months from the date of enactment of the Act for the purpose of determining a new level of retrospective premiums in the range of $10 million to $15 million to be charged each large reactor licensee.

2. Imposes an additional layer of financial protection to be available if the primary and secondary layers are exhausted. This third layer would consist of $500 million in coverage, to be funded by a fee of up to 1.0 mil per kilowatt hour on electricity generated and sold by licensed civilian nuclear power reactors. Here again the Commission would be required to complete formal rulemaking within one year of enactment of the Act to establish the terms and procedures for assessment and collection of the fee when it appears likely that the primary and secondary layers of protection would be exceeded.

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* There are also some less significant changes of a clarifying nature.

3. Establishes a mechanism to enable the President and the Congress to assess the consequences of an accident that results in public liability claims that exhaust the three mandated layers of coverage.

4. Extends the coverage of Price-Anderson by 25 years, to August 1, 2012, to currently licensed reactors and reactors licensed in the future.

For DOE contractors, the bill would:

1. Increase financial protection available to the public as a result of DOE contractor activities to an amount that is equivalent to the financial protection available for NRC reactor licensees.

2. Provides compensation for public liability claims that might arise out of nuclear waste activities.

    a. Provides that in the event of a nuclear accident involving the Nuclear Waste Program the funds that will be immediately available for compensating the public will be equivalent to the funds provided in the event of an accident at an NRC-licensed reactor or for any other DOE-indemnified activity. Depending on whether commercial or def[illegible] wastes contributed to the accident, the source of funds would be the Nuclear Waste Fund established under the Nuclear Waste Policy Act or Federal indemnity, respectively.

   b. Extends waiver of defenses to all nuclear waste activities undertaken by DOE.

3. Establishes a Congressional review mechanism, identical to the mechanism provided for NRC licensees,for assessing accidents involving DOE contractors that result in public liability claims that exceed the initial coverage mandated under the bill.

4. Extends DOE's authority to enter into indemnity agreements with its contractors by 25 years to August 1, 2012.

Analysis

While the staff has had a relatively short time to review S. 1225, it has been aided by the detail in which the bill has been drafted, the section-by-section summary included in the Congressional Record and the remarks of Senators Simpson and McClure in introducing the bill. In discussions in various fora, particularly the National Governors' Association sponsored meetings in which Senate staff drafters and NRC staff participated, the NRC staff was also able to gain some additional insight into particular provisions of the bill.

In general, the staff believes that the objectives of the bill, and the methods of achieving these objectives, are well considered and to a great extent can be broadly supported by the staff. Particular focus is given in the analysis below to those elements that would increase the retrospective premium and that would impose a third layer of coverage.

In the course of this analysis the staff also reviewed the Commission's recommendations and analysis in NUREG-0957, December 1983*.

1. Increase Retrospective Premiums for NRC Licensees

The bill provides for an increase of the retrospective premium assessment from $5 million to a level to be determined by NRC of between $10 million and $15 million per reactor per incident.**

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*The Price-Anderson Act--The Third Decade, NUREG-0957, U.S. Nuclear Regulatory Commission, December 1983.

**NUREG-0957 postulates a situation in which there are 100 operating reactors assessed at $10 million per reactor per year for a total secondary financial protection layer of $1 billion. Together with the $160 million in primary insurance, a total of $1.16 billion was assumed to be available to pay claims each year for an unlimited number of years. S. 1225 is viewed favorably in that it provides some $2.4 billion in the first year. Of this amount, $500 million would be provided through a third layer (see discussion below). If one were to recalculate the NRC's projections in NUREG-0957 so that the secondary financial layer was based on 115 reactors assessed at $15 million per reactor as is done in S. 1225, a total of $1.725 billion in secondary financial protection would be available. By adding the primary insurance layer of $160 million a total of approximately $1.9 billion would also be available to pay claims in the first year.

It appears from available information that most utilities could handle an assessment of up to the maximum of $15 million from annual earnings without severe financial impacts. While it would appear that sufficient information to set the new level might already be available to the Congress, there may be benefits in setting the exact level by formal NRC rulemaking. Broad public comment might provide a fuller record to establish a basis for the level of assessment.

The staff has previously concluded that an assessment of $10 million per reactor per year would be manageable by most utilities.* The staff has not evaluated the level of $15 million specifically; however, it has completed an evaluation of a hypothetical effect of $10, $20, and $50 million assessment on 10 utilities for the years 1981, 1982, and 1983.** This study shows that a one-time assessment of $10 or $20 million could be managed by these utilities in each of these years, and therefore a $15 million assessment presumably would also be manageable.

These conclusions are reached by doing an analysis of earnings and an analysis of internal cash flow. Since for a one-time assessment, the cash flow is more important our comments will

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*NUREG-0957, Staff Subject Report, December 1983.

**Financial Analysis of Potential Retrospective Premium Assessments Under the Price-Anderson System, U. S. Nuclear Regulatory Commission, NUREG-1131, April 1985.

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concentrate on that. It will be noted, however, that the general economic recession and high interest rates of this period (i.e. 1981-1983) placed financial stress on several of these utilities even without any post-loss assessments. Some of the utilities studied had financial indicators used by investors which made it difficult for them to obtain new debt and equity financing on favorable terms.

The most important financial measure for short-term financial capability is the internal cash flow--net income, depreciation on capital plant and equipment, fuel amortization, and various deferred taxes and credits. In doing this analysis, the staff deducted preferred and common dividend payments from cash flow because of the importance most utilities place on making reliable dividend payments to stockholders. In each of the three years each of these 10 utilities could have paid $20 million per reactor (and thus also $15 million), from internal cash flow. In an actual situation, other adjustments could be made, if needed, such as decreasing or eliminating dividend payments or by short-term borrowing. Furthermore, the staff has previously stated its view that it is likely that at some point these assessments would ultimately be allowed for most utilities to be recovered through rate charges to customers.

An important finding of the staff study is that even with a hypothetical $50 million assessment in 1983, most of these 10 utilities would perform nearly as well or better than with no assessment in 1981. Many utilities have suffered from poor performance, at least occasionally in recent years, which would be equivalent to a large assessment. But despite these setbacks they survived and were able subsequently to improve their financial health.

A final note of caution is warranted on assessment insurance. Based on what is now known, a $15 million or higher assessment could probably be handled by most utilities in most years. However, these same utilities also have post-loss assessment provisions in property and other insurance programs. A nuclear incident may trigger other assessment programs. Therefore, the level of liability assessment should not be set without taking into account the other programs.

2. Third Layer of Financial Protection for NRC Reactor Licensees

There are certain attractive features in this third tier layer of financial protection which would consist of $500 million in coverage funded by a fee of up to 1.0 mil per kilowatt hour on electricity generated and sold by licensed civilian nuclear power reactors following a nuclear incident. First, the fund would be assessed by the NRC, thereby possibly alleviating some of the uncertainty expressed by the utility industry as to whether state public utility commissions would allow this expense to be passed through in rates. Second, the assessment of a fee based solely on electricity generated and sold by commercial nuclear power reactor licensees would impact most on utilities with a greater commitment to nuclear power generation. The staff notes, however, that following a serious accident a number of plants may be shut down for safety reasons. (This was the case for B&W plants after the TMI accident.) The extent and length of such shutdowns would have a marked affect on the time needed to collect the mil-assessment.

3. Mechanism for Presidential and Congressional Review to Assess Consequences of Accidents at NRC Licensed Reactors

S. 1225 provides a detailed description of the mechanism that the President and Congress would use in the highly improbable case of an accident that exhausts all financial protection mandated in the bill. The mechanism enlarges and provides more substance to the present provision in 170e. of the Price-Anderson Act that states that in the event of a nuclear incident involving damages in excess of the aggregate liability, the Congress will thoroughly review the particular incident and take whatever action is necessary and appropriate to protect the public from the consequences of a disaster of such magnitude.

One of the principal criticisms of the NRC's recommendation of an annual limitation liability has been that the role of Congress under the Price-Anderson Act to review the causes and consequences of an accident and the need for further compensation would be removed. S.1225 would provide both the President and the Congress with vital roles in this area. If any limitation of liability is to be provided with respect to mandated layers of coverage, the staff believes that the proposed Presidential and Congressional review mechanisms provided in S.1225 are a major enhancement of the related provisions of the present Act.

The section-by-section summary of the bill states that the President's comprehensive report (which it is anticipated will be prepared in consultation with the NRC or DOE as appropriate) and the resulting Congressional action will focus, among other things on "determining what sources of funds should be considered to provide additional compensation." The staff believes that discussion of the degree to which this review mechanism will provide for full compensation will be aided if the drafters of the proposed legislation were to describe in more detail what sources of funds, other than appropriated funds, might be considered in this context.

4. Extend Price-Anderson Coverage for 25 Years for NRC Reactor Licensees

The Commission stated its belief in NUREG-0957 that in view of the strong public policy benefits in ensuring the prompt availability and equitable distribution of funds to pay public liability claims, the Price-Anderson Act should be extended to cover future as well as existing nuclear power plants. The Commission also said that the same amount, type, and terms of public liability protection should be provided for future and existing plants (Page IV-2). In his remarks, Senator Simpson states his belief that all of the changes proposed in the bill for NRC licensees would apply equally to reactors currently licensed, as well as those reactors that might be licensed in the future. The staff believes that the period for which Price-Anderson is extended is a matter for which it has no special expertise but can see no objection to a 25-year extension.

5. DOE Liability Protection to be Equal to NRC Licensees

The issue of the inequality in financial protection for NRC and DOE activities has been difficult to justify in the past. Therefore, the staff supports the provision in S.1225 that provides and will continue to provide equivalent financial protection to the public in the event of a nuclear accident for DOE contractor activities and activities of NRC reactor licensee.

6. Compensation of Public Liability Claims Arising from Nuclear Waste Activities

The staff supports the provision for clearly stating that Price-Anderson covers all nuclear waste transportation, storage, and disposal activities. We support compensating the public in the event of an incident for all activities undertaken by the

Department of Energy, either directly or pursuant to a contract, involving the transportation, storage, or disposal of nuclear waste. We also support clarifying that omnibus provisions serve to indemnify any State or locality from potential public liability for nuclear waste activities.

Section 4 of the Bill provides that in the event of a nuclear incident involving the nuclear waste program, the Secretary of Energy is to determine the extent to which such an incident involves commercial and defense-related wastes. After he has determined what sources were involved, the Secretary then determines the appropriate source of funds for compensating public liability claims. (The commercial pro-rata share comes from the Nuclear Waste Fund, and the defense pro-rata share comes from federal indemnification.) However, in a severe accident involving both types of wastes, it might be difficult or even impossible to make a technical determination of what defense and commercial wastes were involved in the accident.

We defer to DOE on whether compensation of public liability claims arising from incidents involving commercial wastes should come from the Nuclear Waste Fund. It appears that an increase in the Nuclear Waste Fund fee could well be needed after an incident because it is not clear that this use of the Waste Fund was contemplated when the Nuclear Waste Policy Act was enacted.

Certain inconsistencies are posed by Section 4 of S. 1225 because of its connection with the NWPA Nuclear Waste Fund:

- At present, under the NWPA the Waste Fund cannot be applied to storage or disposal of TRU wastes. (This is because of the Act's definition of "high-level," including a provision for NRC rulemaking which has not yet been pursued.) In contradiction to the NWPA's direction, Section 4 of S. 1225, however, would direct use of the Waste Fund relative to TRU wastes.

- The waste storage and disposal activities which may be supported by the Nuclear Waste Fund will go on for many more than the 25 years proposed for extension of Price-Anderson provisions. For example, pursuant to current NRC regulation, there may be a period of up to 50 years after waste emplacement operations are initiated before a DOE repository may be licensed for permanent closure. After closure, the repository must be capable of containing wastes safely for thousands of years.

The staff supports the provision that extends the waiver of defenses to all nuclear waste activities undertaken by DOE.

7. Mechanism for Presidential and Congressional Review to Assess Consequences of Accidents at DOE Facilities

The staff's comments on the Presidential and Congressional review mechanisms for the consequences of accidents at NRC licensed facilities apply as well for the identical mechanisms to assess the consequences of accidents at DOE facilities.

8. Extend Price-Anderson Coverage for 25 Years for DOE Contractors

The staff believes that the period for which Price-Anderson is extended is a matter for which it has no special expertise but can see no objection to a 25-year extension.

9. Technical Redrafting of Price-Anderson Act

While the staff has not had sufficient time to analyze in detail the less significant redrafts of existing Price-Anderson provisions to eliminate unnecessary complexity and confusion, they appear to be helpful and successful in meeting their intent.

The **Chairman**. Mr. Roberts.

STATEMENT OF THOMAS M. ROBERTS AND LANDO W. ZECH, JR., COMMISSIONERS, NUCLEAR REGULATORY COMMISSION

Mr. **Roberts**. Thank you, Mr. Chairman, and members of the subcommittee.

I do in fact have a joint statement that represents the views of Commissioner Zech and myself, and in the interest of time, and you've got a long witness list, I will not read it.

Let me say at the outset that neither Commissioner Zech nor I totally repudiate the NRC report, nor disagree with much of Chairman Palladino's statement. However, we are not personally confident that unlimited liability even with an annual cap is the best approach.

As Chairman Palladino pointed out, we met recently with a number of people with views on this subject. We appreciate the time and effort of all those representatives who presented their views at our June 20 Commission meeting. We understand their positions, and we respect their views.

After reflecting on these events, Commissioner Zech and I affirm our commitment to the objective of assuring that timely and full compensation is available for those injured in the unlikely event of the nuclear accident covered under Price-Anderson. To us, establishment of a system whereby contributions to the compensation fund are made over an indefinite period of years appears incompatible with assuring that an adequate fund is available to make timely compensation payments.

As outlined in our statement, it is our understanding that Senate bill 1225 is consistent with our position. We support it, or any other alternative that ensures the public's financial protection by having available a fund to pay them timely and full compensation.

Thank you, sir.

The **Chairman**. Thank you, very much.

[The prepared statement of Mr. Roberts and Mr. Zech follows:]

STATEMENT OF COMMISSIONERS ROBERTS AND ZECH
ON THE SUBJECT OF THE PRICE-ANDERSON ACT
BEFORE THE SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

THE NRC'S 1983 PRICE-ANDERSON REPORT RECOMMENDED EXTENSION OF THE PRICE-ANDERSON ACT AND INCLUDED A NUMBER OF SUGGESTIONS FOR ITS IMPROVEMENT. FOR US, THE FUNDAMENTAL OBJECTIVE IN RECOMMENDING THE EXTENSION OF PRICE-ANDERSON AND THE INCLUSION OF A LIABILITY LIMIT, IS TO ASSURE THAT PRICE-ANDERSON WOULD CONTINUE TO FULFILL ITS PRIMARY OBJECTIVE OF PROVIDING TIMELY AND FULL COMPENSATION TO ANYONE INJURED AS THE RESULT OF AN ACCIDENT COVERED BY IT. THIS OBJECTIVE IS PARAMOUNT. THUS, LET ME SAY FROM THE OUTSET THAT NEITHER COMMISSIONER ZECH NOR I TOTALLY REPUDIATE THE NRC REPORT NOR DISAGREE WITH MUCH OF CHAIRMAN PALLADINO'S STATEMENT. HOWEVER, WE ARE NOT PERSONALLY CONFIDENT THAT UNLIMITED LIABILITY, EVEN WITH AN ANNUAL CAP, IS THE BEST APPROACH.

SINCE THE NRC REPORT WAS SUBMITTED IN 1983, THERE HAS BEEN A GREAT DEAL OF ATTENTION GIVEN TO THE NUCLEAR LIABILITY ISSUE. SEVERAL BILLS ARE NOW PENDING BEFORE THE CONGRESS TO EXTEND PRICE-ANDERSON AND MODIFY IT IN ONE RESPECT OR ANOTHER. MOREOVER, DURING THIS PERIOD, WE HAVE SEEN MUCH ACTIVITY RELATING TO PUBLIC LIABILITY ISSUES INVOLVING ASBESTOS-INDUCED INJURIES AND TOXIC WASTES, AND, UNFORTUNATELY, THERE WAS THE TRAGIC ACCIDENT IN BHOPAL, INDIA. THE BHOPAL INCIDENT UNDERSCORES THE VALUE OF HAVING A SYSTEM SUCH AS PRICE-ANDERSON TO PROVIDE PROMPT COMPENSATION. THE COMMISSION ALSO HAD A PUBLIC MEETING ON JUNE 20, 1985 WHERE SUPPORTERS OF THE DIFFERENT OPTIONS ON THE EXTENSION OF THE PRICE ANDERSON ACT NOW BEFORE THE CONGRESS EXPRESSED THEIR VIEWS TO THE COMMISSION. WE SINCERELY

APPRECIATE THE TIME AND EFFORT OF ALL OF THE REPRESENTATIVES WHO PRESENTED THEIR VIEWS AT OUR JUNE 20 COMMISSION MEETING ON THE PRICE-ANDERSON ACT. WE UNDERSTAND THEIR POSITIONS AND RESPECT THEIR VIEWS.

AFTER REFLECTING ON THESE EVENTS, COMMISSIONER ZECH AND I REAFFIRM OUR COMMITMENT TO THE OBJECTIVE OF ASSURING THAT TIMELY AND FULL COMPENSATION IS AVAILABLE FOR THOSE INJURED IN THE UNLIKELY EVENT OF THE NUCLEAR ACCIDENT COVERED UNDER PRICE-ANDERSON. TO US, ESTABLISHMENT OF A SYSTEM WHEREBY CONTRIBUTIONS TO THE COMPENSATION FUND ARE MADE OVER AN INFINITE PERIOD OF YEARS APPEARS INCOMPATIBLE WITH ASSURING THAT AN ADEQUATE FUND IS AVAILABLE TO MAKE TIMELY COMPENSATION PAYMENTS.

UNLIMITED LIABILITY, COUPLED WITH WAIVER OF DEFENSES AND AN EXTENDED STATUTE OF LIMITATIONS COULD ENCOURAGE FUTURE LITIGATION, OR THREATS OF LITIGATION, AND USAGE OF THE FUND TO REACH WHAT MAY BE UNJUSTIFIED SETTLEMENTS LONG AFTER AN ALLEGED NUCLEAR INCIDENT. WE DO NOT BELIEVE THAT UNLIMITED LIABILITY WILL NECESSARILY PROVIDE ANY BETTER ASSURANCE THAT INJURED MEMBERS OF THE PUBLIC WILL RECEIVE TIMELY AND FULL COMPENSATION. IT SEEMS TO US THAT THE POTENTIAL FOR UNLIMITED LIABILITY OVER A LONG PERIOD OF TIME MORE LIKELY THAN NOT WOULD RESULT IN MORE AGGRESSIVE DEFENSIVE EFFORTS TO RESIST TIMELY PAYMENTS. IN OUR JUDGMENT, THERE MUST BE SOME LIMIT TO THE SIZE OF THE COMPENSATION FUND, OTHERWISE WE ARE UNABLE TO UNDERSTAND WHY THERE WOULD BE ANY INCENTIVE FOR UTILITIES TO BE WILLING TO SHARE IN UNLIMITED INDUSTRY-WIDE LIABILITY FOR ACCIDENTS AT A PARTICULAR UTILITY'S FACILITY. THIS IS ESPECIALLY SO FOR A UTILITY WITH A LARGE NUMBER OF OPERATING REACTORS. WE ARE UNABLE TO UNDERSTAND WHY IT IS SOUND

PUBLIC POLICY FOR PUBLIC UTILITY CUSTOMERS IN ONE REGION OF OUR COUNTRY TO INCUR PROLONGED, UNLIMITED FINANCIAL OBLIGATIONS BECAUSE OF AN ACCIDENT ELSEWHERE. THIS IS ESPECIALLY SO FOR A UTILITY WITH A LARGE NUMBER OF OPERATING REACTORS.

THEREFORE, WE BELIEVE THAT THE OBJECTIVE OF FULL AND TIMELY COMPENSATION TO INJURED MEMBERS OF THE PUBLIC WOULD BE BETTER SERVED BY AN APPROACH ALONG THE FOLLOWING LINES:

- ASSURE THAT A SIZEABLE COMPENSATION FUND WITH A LIMITATION OF LIABILITY IS AVAILABLE IN A TIMELY MANNER. WE HAVE NO FORMULA TO CALCULATE WHAT THE SIZE OF THE COMPENSATION FUND SHOULD BE. NEVERTHELESS, PROVISIONS SHOULD BE IN PLACE WHICH WOULD ASSURE THAT THE FUND WOULD CONSIST OF THE SUM OF THE PRIVATE INSURANCE AVAILABLE REASONABLE RETROSPECTIVE PAYMENTS AND POSSIBLE FURTHER ASSESSMENTS, I.E., A MILLS PER KILOWATT ASSESSMENT ON NUCLEAR PLANTS IS ONE ALTERNATIVE. PROVISION ALSO COULD BE MADE FOR THE FUND TO INCREASE AT APPROPRIATE INTERVALS TO ACCOMMODATE ANY SIGNIFICANT INCREASES IN THE RATE OF INFLATION.

- IN OUR JUDGMENT, THE PROBABILITY OF AN ACCIDENT WHICH WOULD EXHAUST SUCH A FUND IS HIGHLY UNLIKELY. HOWEVER, SINCE SUCH POSSIBILITY CANNOT BE RULED OUT WITH ABSOLUTE CERTAINTY, WE BELIEVE THAT THE LEGISLATION SHOULD INCLUDE AN APPROPRIATE MECHANISM FOR FEDERAL GOVERNMENTAL CONSIDERATION OF THE APPROPRIATE ACTION TO BE TAKEN, CONSIDERING ALL RELEVANT CIRCUMSTANCES, IN THE EVENT A CATASTROPHIC

> ACCIDENT DOES IN FACT OCCUR AND THERE IS REASON TO BELIEVE THAT THE AVAILABLE FUND IS NOT ADEQUATE TO PROVIDE FULL AND TIMELY COMPENSATION.

PERHAPS THE BHOPAL INCIDENT AND THE RESULTING RUSH TO THE COURTHOUSE IS THE BEST EVIDENCE OF THE NEED FOR THE CONGRESS TO BE INVOLVED IN DETERMINING WHAT IS THE MOST APPROPRIATE RESPONSE TO SUCH A CATASTROPHIC EVENT. IT IS OUR UNDERSTANDING THAT S.1225 IS CONSISTENT WITH THE RECOMMENDATIONS WE HAVE JUST DESCRIBED. WE CAN SUPPORT IT OR ANY OTHER ALTERNATIVE THAT ENSURES THE PUBLIC'S FINANCIAL PROTECTION BY HAVING AVAILABLE A FUND TO PAY THEM TIMELY AND FULL COMPENSATION.

The CHAIRMAN. Commissioner Asselstine.

STATEMENT OF JAMES K. ASSELSTINE, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Mr. ASSELSTINE. Mr. Chairman, I have a statement. I am gong to try and shorten it a good deal in the interest of time.

The CHAIRMAN. Your full statement will be placed in the record.

Mr. ASSELSTINE. Thank you.

I have a few comments on the Commission's testimony and on S. 1225. My comments focus primarily on the issue of whether to retain, modify, or eliminate the limitation on liability now contained in the Price-Anderson Act.

As Chairman Palladino has noted, a key feature of the Commission's report to the Congress a year and a half ago was the Commission's recommendation that the Congress replace the present absolute limitation on liability with an annual limitation on liability. Under this approach, deferred premiums of $10 million for each operating reactor would be collected each year until all public liability claims resulting from a nuclear accident have been paid.

A unanimous Commission endorsed this annual limitation on liability approach as the best way of satisfying the public policy objectives of the Price-Anderson Act, and four of the five Commissioners who voted for that recommendation are sitting in front of you today. Commissioner Zech was not a member of the Commission at the time the Commission made its recommendation to the Congress.

I might add that the Commission made this recommendation that the Congress adopt an annual limitation on liability only after carefully considering a range of other options, including eliminating the limitation on liablity all together, and retaining a limitation on liability on the industry's liability absent further congressional action at some higher level than the $630 million in financial protection now provided under the act. The latter option I think is quite similar to the approach contained in S. 1225.

A majority of the Commission has now chosen to abandon the Commission's previous recommendation for an annual liability limit, and instead to recommend that the Congress retain the limitation on liability with a limiting increase in the amount of financial protection to the public.

Mr. Chairman, I cannot agree with the Commission's change in position. I continue to believe, as did all the Commissioners in December 1983 when we issued our report to the Congress and in June 1984 when we first testified before the Congress on this issue, that the present limitation on liability in the act should be eliminated and should be replaced with an annual liability limit.

In my view, proposals to retain, eliminate, or modify the limitation on liability should be judged using the following four criteria:

First, does the proposal ensure full compensation to the victims of a nuclear accident?

Second, does the proposal provide an assured and timely source of funds to pay public liability claims?

Third, does the proposal avoid imposing the costs of an accident at a nuclear powerplant on the Federal Government?

And fourth, does the proposal avoid imposing a catastrophic financial burden on the individual nuclear utilities?

The Commission's previous recommendation that the Congress adopt an annual liability limit meets each of these four tests. No matter how large the consequences of a nuclear accident, sufficient funds would automatically be available to pay all valid public liability claims. These funds would come from the nuclear utilities. The only remaining Federal role would be as a guarantor in the event that a utility failed to pay its deferred premium.

Substantial funding would be available to pay claims in the first year, and a flow of funds would be available in succeeding years to pay claims arising for latent injuries. Finally, by spreading the costs over succeeding years, the financial health of the utilities should not be jeopardized.

Unfortunately, the same cannot be said for the Commission majority's new proposal. Retaining the liability limit would limit the financial impact of a nuclear accident on the utilities owning and operating nuclear powerplants, to be sure, but it would also provide insufficient funds to pay all the valid claims of the victims of some nuclear accidents. At least two of my colleagues are advocating a liability limit of about $2 billion, an amount similar to the funding which would be available absent further congressional action under S. 1225.

While this is better than the $630 million now available under the act, it is not sufficient to cover the costs of all possible nuclear accidents. As the Commission's rather lengthy Indian Point proceeding made clear, there is a group of accidents which, although very unlikely, could result in damages well in excess of the approximately $2 billion recommended by some of my colleagues and made directly available under S. 1225.

If such an accident were to occur, the funds available under the act would not be sufficient to compensate fully all victims. In that situation, the Congress would have to decide whether to provide further compensation to the victims of the accident, and how to fund additional compensation. Dealing with that question in the aftermath of a catastrophic nuclear accident will not prove to be an easy task. Indeed, one need look no further than the congressional consideration a few years ago of proposals to fund the cleanup of Three Mile Island Unit 2 to see the difficulties in trying to construct a funding scheme after an accident has occurred.

The difficult arguments concerning Federal funding and funding by other utilities and their ratepayers who had no part in causing the TMI accident, as well as the legislative impasse, are, I think, all too familiar to the members of this committee. If we should learn one lesson from the TMI-2 cleanup experience, it is that we should endeavor to establish in advance a framework for compensating the victims of a nuclear accident that will provide full compensation for the public for all possible accident situations.

While the expedited congressional review procedures contained in S. 1225 may result in an early vote in the House and the Senate on a supplemental funding scheme in the event of a catastrophic nuclear accident, they are not likely to make the issues any less controversial or the available choices more palatable, and the result could be another impasse.

Having provided by law that the industry's liability would be fixed at about the $2 billion level, and with new indemnity contracts in effect which reflect this limited liability, I think it will be difficult for the Congress to obtain additional funding from the industry after an accident has occurred. Thus, it is likely that additional funding to pay public liability claims, funding which could run into the billions of dollars, would have to come from the Federal Treasury.

Finally, with a fixed liability limit, some judgment would have to be made on how much of the available funds should be set aside to pay future claims for latent injuries when those injuries become apparent. Apportioning of the available funds has the potential to shortchange either the victims with immediate injuries, or those with latent injuries, or both. Indeed, given the need to set aside a portion of the funds available under a liability limitation scheme such as that contained in S. 1225 to pay claims for latent injuries, I doubt whether that bill would provide much more, if any, additional funding to pay early public liability claims than would be available in the first year alone under the annual limitation on liability approach recommended by the Commission in 1983.

As the Commission recognized, in its report to the Congress in December 1983, these disadvantages argue strongly against retaining the absolute limitation on liability and in favor of the annual liability limit approach.

Mr. Chairman, I also had some comments in my prepared statement on the extraordinary nuclear occurrence concept and the waiver of defenses, but in the interest of time, I'll just put those in my written statement.

Thank you.

[The prepared statement of Mr. Asselstine follows:]

STATEMENT BY JAMES K. ASSELSTINE
COMMISSIONER, U.S. NUCLEAR REGULATORY COMMISSION
BEFORE THE
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES
JUNE 25, 1985

Mr. Chairman, I have a few comments on the Commission's testimony and on S. 1225. My comments focus principally on the issue of whether to retain, modify or eliminate the limitation on liability now contained in the Price-Anderson Act. However, I also intend to touch briefly on the waiver of defenses provision in the Act. My comments will focus on the provisions of the Act which apply to NRC-licensed commercial power reactors.

As Chairman Palladino has noted, a key feature in the Commission's report to the Congress a year and a half ago was the Commission's recommendation that the Congress replace the present absolute limitation on liability in the Act with an annual limitation on liability. Under this approach, deferred premiums of $10 million for each operating reactor would be collected each year until all public liability claims resulting from a nuclear accident have been paid.

A unanimous Commission endorsed this annual limitation on liability approach as the best way of satisfying the public policy objectives of the

Price-Anderson Act, and four of the five Commissioners who voted for that recommendation are sitting in front of you today. Commissioner Zech was not a member of the Commission at the time the Commission made its recommendations to the Congress. I might add that the Commission made this recommendation that the Congress adopt an annual limitation on liability only after carefully considering a range of other options, including eliminating the limitation on liability altogether and retaining an absolute limitation on the industry's liability at some higher level than the $630 million in financial protection now provided under the Act. The latter option is quite similar to the approach contained in S. 1225.

Mr. Chairman, several weeks ago some members of the Commission began to reconsider their position on the limitation on liability. This process of reconsideration began with visits to each of us by representatives of a large nuclear utility. Those representatives, speaking on behalf of the nuclear industry, advised us that the industry would strongly oppose any effort to eliminate the absolute limitation on liability under the Price-Anderson Act, including the Commission's recommendation for an annual limitation on liability. They indicated that if the Commission did not abandon its recommendation for an annual limitation on liability the nuclear industry would oppose any extension of the Act and thus we would risk losing any increase in financial protection beyond that provided by the present provisions of the Price-Anderson Act. In the Commission's June 3, 1985 responses to questions from the House Subcommittee on Energy and the Environment, a majority of the Commission chose to abandon the

Commission's previous recommendation for an annual liability limit and instead to recommend that the Congress retain an absolute limitation on liability with a limited increase in the amount of financial protection for the public.

Mr. Chairman, I cannot agree with the Commission's change in position. I continue to believe, as did all the Commissioners in December 1983 when we issued our report to the Congress and in June 1984 when we first testified before the Congress on this issue, that the present absolute limitation on liability in the Act should be eliminated and should be replaced with an annual liability limit. In my view, proposals to retain, eliminate or modify the limitation on liability should be judged using the following four criteria:

- Does the proposal assure full compensation to the victims of a nuclear accident?

- Does the proposal provide an assured and timely source of funds to pay public liability claims?

- Does the proposal avoid imposing the costs of an accident at a nuclear powerplant on the Federal government?

- And, does the proposal avoid imposing a catastrophic financial burden on individual nuclear utilities?

The Commission's previous recommendation that the Congress adopt an annual liability limit meets each of these four tests. No matter how large the consequences of a nuclear accident, sufficient funds would automatically be available to pay all valid public liability claims. These funds would come from the nuclear utilities, and the only remaining federal role would be as guarantor in the event that a utility failed to pay its deferred premium. Substantial funding would be available to pay claims in the first year, and a flow of funds would be available in succeeding years to pay claims arising from latent injuries. Finally, by spreading the cost over succeeding years, the financial health of the utilities should not be jeopardized.

Unfortunately, the same cannot be said for the Commission majority's new proposal. Retaining the absolute liability limit would limit the financial impact of a nuclear accident on the utilities owning and operating nuclear powerplants. But it would also provide insufficient funds to pay all the valid claims of the victims of some nuclear accidents. At least two of my colleagues are advocating a liability limit of about $2 billion--an amount similar to the funding which would be provided under S. 1225. While this is better than the $630 million now available under the Act, it is not sufficient to cover the costs of all possible nuclear accidents. As the Commission's rather lengthy Indian Point proceeding made clear, there is a group of accidents which, although unlikely, could result in damages well in excess of the approximately $2 billion recommended by some of my colleagues and provided under S. 1225. If such an accident were to occur, the funds available under the Act would not be sufficient to compensate fully all victims.

In that situation, the Congress would have to decide whether to provide further compensation to the victims of the accident and how to fund that additional compensation. Dealing with that question in the aftermath of a catastrophic nuclear accident will not prove to be an easy task. Indeed, one need look no farther than the Congressional consideration a few years ago of proposals to fund the cleanup of Three Mile Island Unit 2 to see the difficulties in trying to construct a funding scheme after an accident has occurred. The difficult arguments concerning federal funding and funding by other utilities and their ratepayers who had no part in causing the TMI accident as well as the resulting legislative impasse are, I think, all too familiar to the members of this Subcommittee. If we should learn one lesson from the TMI-2 cleanup experience, it is that we should endeavor to establish in advance a framework for compensating the victims of a nuclear accident that will provide full compensation for the public for all possible accident situations. While the expedited Congressional review procedures contained in S. 1225 may result in an early vote in the House and Senate on a supplemental funding scheme in the event of a catastrophic nuclear accident, they are not likely to make the issues any less controversial or the available choices more palatable. And the result could be another impasse.

Having guaranteed by law that the industry's liability would be fixed at about the $2 billion level, and with new indemnity contracts in effect which reflect this limited liability, I think it is unlikely that the Congress would be successful in obtaining additional funding from the industry after an accident occurred. Thus, in all probability, additional funding to pay public liability claims--funding which could run into the billions of dollars--would have to come from the Federal Treasury.

Finally, with a fixed liability limit, some judgment would have to be made on how much of the available funds should be set aside to pay future claims for latent injuries when those injuries become apparent. Apportioning of the available funds has the potential to short-change either the victims with immediate injuries or those with latent injuries, or both. Indeed, given the need to set aside a portion of the funds available under an absolute liability scheme such as that contained in S. 1225 to pay claims for latent injuries, I doubt whether that bill would provide much, if any, additional funding to pay early public liability claims than would be available in the first year alone under the annual limit on liability approach recommended by the Commission in 1983. As the Commission recognized in its report to the Congress in December 1983, these disadvantages argue strongly against retaining the absolute limitation on liability and in favor of the annual liability limit approach.

Mr. Chairman, I have to add a comment on the nuclear industry's role in this debate over the limitation on liability. Quite frankly, I am very disappointed at the industry's opposition to the Commission's recommendation of the annual limitation on liability. I had hoped that the industry would see this as an opportunity to help assure full public protection from all possible nuclear accidents, including the low probability but high consequence accidents that would lead to large public liability claims. I think that the industry's willingness to accept the residual financial risk of these accidents would also have helped build public confidence in the safety of nuclear power. In that vein, I find it somewhat difficult to reconcile the industry's repeated assurances over the past several months that the chance of a nuclear accident causing any injury to the public is so remote as to be incredible with their opposition to the removal of the absolute limitation on liability. While the increase in the absolute liability limit contained in S. 1225 and recommended by the Commission majority and the industry would be an improvement over the present Act, it would be a small step. It fails to achieve the broader public policy objectives that would be met by a more sweeping reform of the Price-Anderson system.

Mr. Chairman, I have one final comment on the extraordinary nuclear occurrence, or ENO, concept in the Price-Anderson Act. The Act establishes a subcategory of nuclear accidents which are identified as ENO's. An ENO is defined as a nuclear incident which involves: (1) substantial radiation doses or radioactive material at offsite locations; and (2) substantial actual or probable offsite damage to persons or property. If the Commission determines that a nuclear incident constitutes an ENO, the waiver of defenses provisions under the Act are activated. Under these provisions, a defendant must waive any issue or defense (1) as to the conduct of the claimant or fault of persons indemnified; (2) as to charitable or governmental immunity; or (3) based on any statute of limitations if suit is instituted within three years from the date on which the claimant first knew, or reasonably could have known, of his injury or damage and the cause, but in no event more than 20 years after the date of the nuclear incident.

Our experience in attempting to determine whether the TMI-1 accident was an ENO identified a number of difficulties with our criteria for making the ENO determination. While the Commission has published a proposed rule with three possible options for improving our ENO criteria, I am not yet convinced that any of these rulemaking options will fully solve the problems. Nor am I convinced that the ENO concept and the preservation of these legal defenses for nuclear incidents which do not constitute an ENO necessarily provide a fair and equitable means for deterring frivolous claims, which is the principal basis used by the Commission majority in support of retaining the present approach. In fact, I suspect that these legal defenses can serve to bar recovery of legitimate as well as frivolous claims, and can result in nonuniform results depending upon the location of the accident. For these reasons, former Commissioner Gilinsky and I recommended in the Commission's 1983 report that the Congress eliminate the ENO concept from the Act and require the waiver of defenses for all nuclear incidents. This change would establish "no fault" coverage for all nuclear incidents, would assure more uniform determinations on recovery for public liability claims from nuclear incidents and would eliminate the difficulties in establishing practical and workable criteria for making ENO determinations. I continue to believe that these benefits support the elimination of the ENO concept and the extension of the waiver of defenses provision to all nuclear incidents. Thank you.

The **Chairman**. Mr. Bernthal.

STATEMENT OF FREDERICK M. BERNTHAL, COMMISSIONER, NUCLEAR REGULATORY COMMISSION

Mr. **Bernthal**. Mr. Chairman, I will abbreviate my statement, but I also would beg your indulgence to make a comment or two on the extraordinary nuclear occurrence provision, also on an element of the recent Supreme Court decision on *Silkwood* that I think needs addressing.

There's little doubt that adoption of the Commission's original Price-Anderson recommendation would eventually provide sufficient funds to pay all claims that might arise from a nuclear accident. And while I might still consider the basic principle of that proposal sound, I've come to be convinced that it's predicated on an unrealistic world.

Perhaps most significantly, in the wake of recent events in the chemical industry and elsewhere, I've developed a profound and decisive skepticism over the wisdom of dangling an annually renewable $1 billion before the noses of some of this country's attorneys at tort law. In fact, I can envision the creation thereby of a whole new industry and special interest group, legions of lawyers, sustained forever by an annually renewable $1 billion Price-Anderson stipend.

So while I supported the original Commission recommendation that was formulated before the beginning of my tenure, my views on this subject departed from the Commission's 1983 position in one major respect, and with good reason. There's no doubt that an increase in the current retrospective premium of $5 million per incident should be increased by an amount two, three, or perhaps even four times as large. But for the reasons I have outlined, I now believe that provision should apply for a limited period of time after an accident.

Briefly, I've concluded that any new legislation should be crafted to achieve two primary objectives.

First, I'd recommend that the pool of money available to pay compensatory damage claims be larger than suggested by some, perhaps as much as $5 billion. Such a fund would assure that victims of an accident could receive compensation equal to or greater than that which would exist if there were so-called unlimited liability. The free-market version of such unlimited liability would in reality be limited with resounding and painful finality by the net worth of the entity responsible for an accident, were normal tort principles to govern recovery.

Second, I believe that the goal of any legislation should be collection of the retrospective premiums in a timely manner, and I think on that we can all agree. A one-time assessment may well be too large for many utilities to handle. However, if our own staff is correct in its judgment, the utilities should be able to handle up to $20 million a year. A fund as large as $5 billion could likely be amassed within 3 years after an accident, and certainly within 5 years.

Among the other benefits that such a plan would offer, I'd lke to focus for a moment on the limit that it would impose on the time that the Nation's practitioners of tort law would otherwise have to ply their trade in the event of a serious nuclear accident, and it would restrict the magnitude if not the source of fees payable to counsel for the injured.

Now this consideration is clearly an attempt to nip in the bud a germinating problem that, unchecked, could grow to destroy the concept of a streamlined administrative compensation system such as Price-Anderson. As I have indicated, it lies at the heart of my most recent thoughts on this subject.

In modifying Price-Anderson, Congress should consider mandating a system to provide the maximum possible expeditious compensation to victims of a nuclear accident, compensation unencumbered either by the failings of a deteriorating tort law system, or by the inclinations of some practitioners of tort law.

Finally, I recognize and strongly endorse the practical reality and probable necessity of ultimate congressional involvement in the event of any accident of truly catastrophic proportions, whether nuclear or anything else, and especially including a nuclear incident that might exhaust all initial coverages available even under an amended Price-Anderson.

Having said all this, I must also say the industry does itself no good by sometimes giving the appearance of wanting to have its cake and eat it too, in this matter. Arguing for strictly limited liability under Price-Anderson on the one hand, and for a large reduction in source terms on the other, is an illogic not likely to escape the man on the street. If it's true that an accident at a nuclear plant would be no more serious than that at any other large industrial facility, then the industry simply cannot afford to be perceived as resistant to normalizing adjustments in the Price-Anderson premium level and payment of all legitimate claims in an accident.

Now some have long argued that the nuclear enterprise couldn't survive without the subsidy they saw implicit in the oft-maligned Price-Anderson legislation. But time has shown that no funds were ever paid by the Federal Government in connection with its Price-Anderson liability, and in fact the Government's share of that liability has steadily diminished to zero as new powerplants have come on line in recent years.

In fact, events of the past few years, and the major and real problems facing the chemical industry and the EPA, lead to the ironic conclusion that instead of being an embarrassing stepchild of the nuclear enterprise, Price-Anderson may well become a model for rapid, assured compensation of the public in the case of catastrophic accidents—chemical, nuclear, or whatever.

The message being learned is that there is no such thing as unlimited liability for any industry, just as there is no such thing as unlimited compensation in real life. I believe time is proving Price-Anderson to be enlightened, landmark legislation to protect the public from years of litigation, rather than to protect the industry from bankruptcy that would still not compensate an injured public.

Now in connection with the Commission's consideration of this issue, Mr. Chairman, I have also urged a major modification of the Commission's regulations defining extraordinary nuclear occurrence. Even Three Mile Island fell far short of qualifying as an

ENO, but it did expose a number of fundamental flaws in the current definition of the term.

Quite simply, in my judgment an extraordinary nuclear occurrence should be determined instrumentally by offsite surface contamination dose rate, or by dose integration, during the first 24 hours following release. It is a simple, inexpensive, and a definitive solution to what is now a very complicated problem. The Commission's current defining regulation is a lawyer's dream and a plaintiff's and a licensee's nightmare.

And, last, I cannot leave the subject of compensation without commenting for a moment on the *Silkwood* case reviewed not long ago by the Supreme Court. In a 5 to 4 decision, the Court held that a State may award punitive damages against an entity regulated by the NRC for actions a jury finds negligent even though all NRC regulations may have been complied with. In other words, every jury in America can now theoretically serve as its own Nuclear Regulatory Commission. Or, as the original judge in the *Silkwood* case so memorably charged his jury, "Your duty is to determine what constitutes the exercise of reasonable care in handling plutonium."

Congress should make clear that punitive damages are not to be paid with Price-Anderson insurance funds. If a licensee can insure against punitive damages, such damages lose all deterrent value as punishment; nor, in my judgment, did Congress ever intend the Atomic Energy Act to deny an injured person the opportunity to recover punitive damages in cases where NRC standards have been violated.

Congress should also seriously consider reaffirming in the Atomic Energy Act a principle missed by the Supreme Court in *Silkwood*: That a licensee fully in compliance with NRC regulations is not liable for punitive damages—a principle made shambles by the Court's erroneous acceptance in *Silkwood* of that lower court judge's instruction to the jury to serve, in effect, as a local NRC.

That completes my statement, Mr. Chairman.

[The prepared statement of Mr. Bernthal follows:]

STATEMENT OF

FREDERICK M. BERNTHAL, COMMISSIONER

U.S. NUCLEAR REGULATORY COMMISSION

CONCERNING PROPOSALS TO AMEND

THE PRICE-ANDERSON ACT

June 25, 1985

Mr. Chairman, there is little doubt that adoption of the Commission's original Price-Anderson recommendations would eventually provide sufficient funds to pay all claims that might arise from a nuclear accident. And while I may still consider the basic principle of that proposal sound, I have come to be convinced that it is predicated on an unrealistic world.

I recognize the concern that the proposal introduces the perception (if not the practical effect) of "unlimited liability" in the payment of claims. And there is the legitimate question of whether such payments would in fact be timely.

Finally, and perhaps most significantly, in the wake of recent events in the chemical industry and elsewhere, I have developed a profound and decisive skepticism over the wisdom of dangling an annually renewable $1 billion before the noses of some of this country's attorneys at tort law. I can envision the creation thereby of a whole new industry and special interest group -- legions of lawyers, sustained forever by an anually renewable $1 billion Price-Anderson stipend.

So while I supported the original Commission recommendation that was formulated before the beginning of my tenure, my views on this subject have departed from the Commission's 1983 position in one major respect, and with good reason. There is no doubt that an increase in the current retrospective premium of $5 million per incident should be increased to an amount two, three, or even four times as large. But for the reasons I have outlined, I now believe that provision should apply for a limited period of time after an accident.

There do indeed appear to be other (and better) solutions to the Price-Anderson problem, solutions which can both protect the public adequately and treat the industry fairly. While I continue to believe that many of the Commission's 1983 recommendations are sound, I have concluded that any new legislation should be crafted to achieve two primary objectives:

First, I would recommend that the pool of money available to pay compensatory damage claims be larger than suggested by some -- perhaps as much as $5 billion. Such a fund would assure that victims of an accident could receive compensation equal to or greater than that which would exist if there were so-called "unlimited" liability. The "free-market" version of such unlimited liability would in reality be limited with resounding and painful finality by the net worth of the entity responsible for an accident,+ were normal tort principles to govern recovery. (In few if any cases does the practical, net liquid worth of a nuclear utility exceed $5 billion).

On the other hand, if the much talked over but seldom committed principle of a truly unlimited liability, unique to the nuclear power industry (as opposed to the assets-limited "unlimited liability" of a free market), were now to be mandated Act of Congress, then similar measures should be applied to other industries that may also have the potential for accidents with claims far exceeding their net liquid assets and insurance funds.

[Indeed, 1985 may be remembered as the year in which the chemical accident achieved the dubious distinction of becoming the new benchmark of industrial catastrophe. A major nuclear accident almost certainly would not have the life-threatening consequences of a Bhopal; its primary impact is likely to be economic -- with the potential for very large economic losses. And this, of course, is what Price-Anderson is designed to deal with.]

Viewed in this context, it seems unarguable that an injured public would be far better off with than without Price-Anderson.

Second, I believe that the goal of any legislation should be collection of the retrospective premiums in a timely manner. A one-time assessment may well be too large for many utilities to handle. However, if our staff is correct in its judgment that utilities would be able to handle up to $20 million per year, a fund as large as $5 billion could likely be amassed within three years after an accident, and certainly within five years. Such a plan would:

(1) provide for reasonably swift compensation for the public -- equitable compensation at least as rapid as that under the 1983 NRC proposal;

(2) be protective of the voluntary, retrospective premium structure for indemnification of the utilities involved, without jeopardizing their financial viability;

(3) eliminate the concern that an indefinite term for such retrospective premiums, as suggested by the NRC in 1983, represents an unjust and unreasonable burden on all utilities obligated to pay for the mistakes of one;

(4) dispense with the objection that such an indefinite term carries with it the perception (if not the practical reality) of "unlimited liability"; and importantly,

(5) limit the time the nation's practitioners of tort law would otherwise have to ply their trade in the event of a serious nuclear accident, and restrict the magnitude, if not the source of fees payable to counsel for the injured.

The last is a plain attempt to confine a germinating problem that, unchecked, could grow to destroy the concept of streamlined administrative compensation systems such as Price-Anderson. As I have indicated, it lies at the heart of my most recent thoughts on this subject.

In its 1983 report to Congress, the Commission recommended that Congress clarify the Price-Anderson statute to exclude the payment of costs of investigation, settlement, and defense of claims from the two levels of financial protection established in the Act. I strongly concur in that recommendation. Insurance company lawyers, whose job is to limit the recovery of damage claims, should not be paid from the same fund established to compensate the injured. That is an egregious flaw in the current legislation.

Indeed, in the past few years the application of tort law to large accidents of major public consequence has exhibited a disturbing evolution that is compelling, even to the most casual observer. It would be a mockery of the term "full compensation" if fully one third of the damages awarded from Price-Anderson funds were to wind up in the coffers of lawyers representing those victims. Under the Commission's 1983 proposal, the legal profession would continue to reap these now almost customary large monetary benefits from funds intended to compensate the victims of a disaster.

In modifying Price-Anderson, Congress should therefore consider mandating a system to provide the maximum possible expeditious compensation to victims of a nuclear accident -- compensation unencumbered either by the failings of a deteriorating tort-law system, or by the inclinations of some practitioners of tort law.

Finally, I recognize and strongly endorse the practical reality and probable necessity of ultimate Congressional involvement in the event of any accident of truly catastrophic proportions, including a nuclear accident that might exhaust all initial coverages available even under an amended Price-Anderson.

Having said all this, I must also say the industry does itself no good by sometimes giving the appearance of wanting to have its cake and eat it too in this matter. Arguing for strictly limited liability under Price-Anderson on the one hand, and for a large reduction in source term on the other is an illogic not likely to escape the man on the street.

If it is true that an accident at a nuclear plant would be no more serious than that at many other large industrial facilities, then the industry cannot afford to be perceived as resistant to normalizing adjustments in the Price Anderson premium level, and payment of all legitimate claims in an accident.

Some have long argued that the nuclear enterprise couldn't survive without the subsidy they saw implicit in the oft-maligned Price-Anderson legislation. But time has shown that no funds were ever paid by the federal government in connection with its Price-Anderson liability, and in fact the government's share of that liability has steadily diminished to zero as new powerplants have come on line in recent years.

In fact, events of the past few years, and the major and real problems facing the chemical industry and the EPA lead to the ironic conclusion that, instead of being an embarrassing step-child of the nuclear enterprise, Price-Anderson may become a model for rapid, assured compensation of the public in the case of catastrophic accidents -- chemical, nuclear, or whatever.

The message being learned is that there is no such thing as unlimited liability for any industry, just as there is no such thing as unlimited compensation in real life. I believe time is proving Price Anderson to be enlightened, landmark legislation to protect the public from years of litigation, rather than to protect the industry from a bankruptcy that would still not compensate an injured public.

In connection with the Commission's consideration of this issue, I have also urged a major modification of the Commission's regulations defining "extraordinary nuclear occurrence". Even Three Mile Island fell far short of qualifying as an "ENO" but it did expose a number of fundamental flaws in the current definition of the term.

Quite simply, in my judgment an extraordinary nuclear occurrence should be determined instrumentally, by offsite surface contamination dose rate, or by dose integration, during the first 24 hours following a release -- a simple, inexpensive, and definitive solution to what is now a very complicated problem. The Commission's current defining regulation is a lawyer's dream and a plaintiff's (and licensee's) nightmare.

Finally, I cannot leave the subject of compensation without commenting briefly on the Silkwood case reviewed not long ago by the Supreme Court. In a 5-to-4 decision, the Court held that a state may award punitive damages against an entity regulated by the NRC for actions a jury finds negligent -- even though all NRC regulations may have been complied with.

In other words, every jury in America can now theoretically serve as its own Nuclear Regulatory Commission. Or, as the original judge in the Silkwood case so memorably charged his jury, "Your duty is to determine what constitutes the exercise of reasonable care in handling plutonium."

Congress should make clear that punitive damages are not to be paid with Price-Anderson insurance funds. If a licensee can insure against punitive damages, such damages lose all deterrent value as punishment. Nor, in my judgment, did Congress ever intend the Atomic Energy Act to deny an injured person the opportunity to recover punitive damages in cases where NRC standards have been violated.

And Congress should also seriously consider reaffirming in the Atomic Energy Act the principle missed by the Supreme Court in Silkwood, that a licensee fully in compliance with NRC regulations is not liable for punitive damages -- a principle made shambles by the Court's erroneous acceptance in Silkwood of that lower court judge's instruction to the jury to serve, in effect, as a local NRC.

The **Chairman**. Thank you very much.

Commissioner Zech.

Mr. **Zech**. Commissioner Roberts has presented my position, Mr. Chairman, which is essentially our joint position. I just would like to emphasize that I did not participate in the 1983 Commission report on the Price-Anderson Act. Since becoming Commissioner, my review of the Price-Anderson situation has led me to conclude that S. 1225 would provide the changes to the Price-Anderson system that seem to be compatible with my views.

Thank you, Mr. Chairman.

The **Chairman**. Thank you, very much.

Mr. Chairman, the NRC staff did a study of the effects of $10 million, $20 million, and even $50 million premium assessments on utility cash-flow. Can you tell us the results of that study?

Mr. **Palladino**. I can perhaps do better if I call on one of my staff members.

The **Chairman**. That would be satisfactory. I guess what I'm looking at in that is at what point is a retrospective premium considered excessive.

Mr. **Kerr**. Well, Mr. Chairman——

The **Chairman**. Would you identify yourself for the record?

Mr. **Kerr**. I am Mr. Kerr of the staff.

The **Chairman**. Thank you.

Mr. **Kerr**. This study was submitted for the record with the chairman's submittal, I believe. What we did was take 10 utilities and assess what the impact of a $10 million, a $20 million, or a $50 million retro premium per year would be. I think if you look at the $10 million one, we did it for 3 years, for 1981, 1982, and 1983, that the $10 million one was manageable for all the ones we looked at. The most severe impact, if you look at cash-flow per share, was on Commonwealth Edison in 1981, would have reduced cash-flow about 50 percent. But in 1983, it was about 10 percent. But in any event, it was a manageable figure in all the ones we looked at.

The **Chairman**. Is such a retroactive premium a cost of doing business?

Mr. **Dinitz**. Yes, Mr. Chairman. I'm Ira Dinitz of the staff. The cost of such a premium the staff believes would be a cost that would be passed on by the utility in the rates base, approved by the public utility commission, but the calculations that the staff has looked at not only in connection with the 1981 to 1983 figures, but also since 1977 where utilities have to provide to the staff a guarantee of retrospective premium, in almost all cases almost all utilities have been able to show to the staff for the 6- or 7-year period that they would be able to meet a $10 million retrospective premium without any difficulty.

Mr. **Asselstine**. Mr. Chairman, I think it's fair to point out that the staff's judgment on that is based upon past practice by utility commissions. This would be subject to utility commission rulings in the future in the event that this ever came into play. We can't guarantee you how they're going to come out on those kinds of decisions, but at least looking at past practice it would appear that this would be treated as an ordinary cost of doing business.

The **Chairman**. Mr. Asselstine, in your testimony you say that S. 1225 might only permit the Congress to provide appropriated funds to supplement the $2.4 billion it provides. You argue—I hope I state it correctly—you argue that if the Congress did otherwise, like impose further fees on utilities or vendors, it would be unconstitutional.

Mr. ASSELSTINE. I said I thought it would be very difficult to do that. I recognize from the question that you asked of Mr. Rusche the intent behind S. 1225, which is to provide an immediate source of funding, and then to allow the Congress to take a fresh look at some point down the road.

The CHAIRMAN. How does a retrospective imposition of fees differ from the Superfund legislation we've enacted?

Mr. ASSELSTINE. It may be possible to do that. I think the difference here is that you would have a law that specifically addressed the question and said: The liability of the industry is a certain amount. That amount is written into the statute.

Then you have us issuing indemnification agreements with our licensees that also incorporate that limit, that pledge that this is the limit on the industry's liability for all persons indemnified.

The CHAIRMAN. Have you read 1225?

Mr. ASSELSTINE. Yes, sir, I have.

The CHAIRMAN. Where does it say that's the limit?

Mr. ASSELSTINE. It provides that amount of money under the act by amending those provisions.

The CHAIRMAN. It says if there's a need for more, we'll get more.

Mr. ASSELSTINE. That's correct, but it does require further action by the Congress, and one Congress can't bind a future Congress.

The CHAIRMAN. That's certainly true, but I think every Member up here reacts to a situation like that. It's been my experience, so far at least, that in the event of such an incident the likelihood is the Congress is going to overrespond rather than underrespond.

Mr. ASSELSTINE. That may be, Mr. Chairman. I think my feeling, though, is that it's perhaps more difficult after the fact to deal with that kind of a situation, and some tough questions about who's going to pay, than perhaps it is beforehand.

The CHAIRMAN. If indeed it is impossible for Congress to act under those circumstances to impose retroactive liability, how does that distinguish from what we're trying to do now? Aren't we trying under this legislation, under S. 1225, to do a similar thing, to change the terms of the deal after the deal has been made?

Mr. ASSELSTINE. It's true that in essence we're requiring, at least under the Commission's proposal as well as under S. 1225, greater commitments by the industry. That is precisely of course what the Congress did in 1977 when it got the Government out of the indemnification business and required that utilities paid deferred premiums for the first time. Up until that time, of course, all the industry was obligated to do was purchase whatever private insurance was available. So it is an escalating program under S. 1225 as well as under the Commission's recommendation back in 1983.

The CHAIRMAN. It seems to me that to say you couldn't, in the event of a major accident, change the law or change the terms, would also indicate we can't do it now. If we can do it now, I don't know why we couldn't do it then.

Mr. ASSELSTINE. Well, it's certainly fair to say that one of the strongest arguments that the industry is making now against the

Commission's 1983 proposal is that you're requiring that they pay more under that approach. And I think if you hear that argument now, you're certainly going to hear it at the time that you're trying to develop a supplemental funding scheme after an accident has occurred, just as you heard the same kind of argument from the industry when you were working on a TMI cleanup funding scheme.

The CHAIRMAN. Mr. Asselstine, there are two things about your statement I want to explore a little further, and not just in terms of the specific implications——

Mr. Bernthal, did you have a comment?

Mr. BERNTHAL. Yes, Mr. Chairman. I just wanted to make the comment—though I'm reluctant to dip too deeply into the swamp of constitutional law; I'm certainly not an expert in it. I wanted to point out, however, that——

The CHAIRMAN. If you're paid a sufficient number of fees, you could become an expert in it. [Laughter.]

Mr. BERNTHAL. Maybe I should consider that someday, Mr. Chairman. [Laughter.]

The CHAIRMAN. I thought that was the thrust of your statement. [Laughter.]

Mr. BERNTHAL. The staff did point out, on the other side of the coin here, that serious constitutional questions can also be raised, legitimate questions can also be raised, about the Commission's version of this legislation. So it seems to me if there's a question on one side, there surely is an arguable question on the other side. That's all I wanted to say.

The CHAIRMAN. Mr. Asselstine, in your statement one reading of it could lead one to the conclusion—and I want to ask you if that reading is correct—the implication is very clear that you charge the other Commission members of having yielded to industry pressure in changing their views. Did you really mean to make that kind of a charge?

Mr. ASSELSTINE. I think it is certainly fair to say that the Commission reconsideration began with industry initiatives complaining about the Commission's 1983 report. Up until those visits, there wasn't a peep out of any member of the Commission about any concerns or problems with the 1983 recommendation, or with the Commission's unanimous position in the summer of 1984 when we first testified before the Congress.

The CHAIRMAN. I assume, Mr. Asselstine, that the Commission members do get information from a variety of sources——

Mr. ASSELSTINE. Oh, sure. There's no question about that.

The CHAIRMAN [continuing]. And that they react to that information. Isn't that correct?

Mr. ASSELSTINE. That is certainly correct, Mr. Chairman.

The CHAIRMAN. The reason I raise the question is, you serve on a body which is supposed to be collegial. If it's to function well, it has to be collegial. And what you did is just stop colleging. When you charged them of responding to undue influence by an industry, it seems to me you've very effectively isolated yourself from any consideration by your members on that board. I would react that way. If some member of this committee were to charge me of yielding to industry pressure, I would perhaps stop listening to anything they had to say. Perhaps that's what you intended. Maybe you don't

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care what they think of you, or your attitude, or your opinion, but I would think you care.

And with respect to whether or not they change their mind, you make much about that in your statement. They changed their mind. Well, I didn't see anybody criticizing you at the time you changed your mind on the timing of the preliminary determination for site suitability in the Nuclear Waste Policy Act, and yet you did change your mind on that, and I assume you changed your mind after listening to somebody.

Mr. ASSELSTINE. Mr. Chairman, I think that if I have a concern about the way that the Commission has handled its recommendations on the Price-Anderson Act and its change in position, it's in the manner in which that decision was made and the lack of discussion and consideration of a variety of points of view on that very issue.

My feeling was that we spent a fair amount of time working on this report in 1983. The report came up to the Commission and it received a great deal of attention and work by members of the Commission. There were substantial revisions to the report, and after which the Commission approved the report unanimously at the time.

My feeling was, if you're going to reconsider that kind of a question, it ought to be done based upon a thorough consideration of the issue, at least some discussion among members of the Commission, and then a fairly careful and considered debate on the question. That wasn't how this was done. We got a memo from the chairman after this first industry visit saying the industry's got big problems with this, and some of the——

The CHAIRMAN. Mr. Chairman Palladino, did you do this without any consideration, or without any thoughtful consideration of the position that you yourself take?

Mr. PALLADINO. Mr. Chairman, while I continue to support the December 1983 report, I do not support the statement or the implication that Commissioners improperly changed their minds. I do believe that Commissioners have the responsibility to take the wide variety of points of view into account, and I do not impugn them for whatever caused them to change their minds. So I don't agree with that aspect of Mr. Asselstine's comment.

The CHAIRMAN. Mr. Roberts.

Mr. ROBERTS. Well, I speak only for myself. I certainly have not changed my mind on what the purpose of Price-Anderson is—and that is, time and full compensation. I certainly may have rethought what might be the best way to arrive at that worthy goal, and I certainly am offended at any suggestion that I have been unduly influenced by any particular interest group.

The CHAIRMAN. Mr. Bernthal.

Mr. BERNTHAL. Mr. Chairman, I don't want to make too much of this, but anyone that thinks that the industry has somehow had excessive influence on my thinking ought to talk to the one or two industry people that I was rather unkind to, I should say, in the conversations that I had with them. That's simply absurd to suggest that I haven't done my own thinking on this issue.

I would point out that I was not a party during the preparation of that 1983 Commission staff recommendation. That doesn't change the fact, of course, that 2 years ago indeed I voted for it. A lot has happened in the last 2 years, Mr. Chairman.

We have seen the consummation of the agent orange issue. We've seen the continuation of the cleanup of numerous chemical waste sites under the Superfund legislation. We've seen Bophal and the spectacle, I should say, that followed the Bophal incident. I don't make any apologies at all for rethinking my position with respect to the Commission's recommendations.

I would just say that this extraordinary emphasis on process is justified only to the extent that it is true that the Commission probably was remiss in not ever having scheduled, let alone at the last minute, a collegial discussion of the entire Price-Anderson issue.

But I would add that, although we received considerable criticism, unjustified I think, in the other body not so long ago in a hearing, this Commission has had many other things that are directly affected by its regulatory decisions to consider in the last many weeks, and certainly in the last year or two. Price-Anderson is something on which we were asked our opinion, and we try to give our opinion as best we can. But quite frankly, Price-Anderson is not the essence of the Commission's regulatory mission.

The **Chairman**. Let me ask a general question of all the members of the Commission, because there have been a number of comments on the reasonableness of the Federal Insurance Administration's 1979 report in which it estimated a potential property damage loss of $17 billion if the TMI-2 accident had been severe. I ask the question because I really want to know what is a reasonable initial funding to provide for the Price-Anderson liability coverage.

Since the time of that 1979 study, and since studies of TMI-2 have revealed that the reactor did in fact experience partial meltdown without causing severe offsite radiation exposure, the source term studies as I understand them indicate that reactor containment integrity is much higher than originally thought, and offsite releases of fission products are lower than thought due to chemical interactions with coolant and containment structures.

First of all, I want to know if I have said that correctly, if that's sustained by the record. And second, if that is correct, does that new information invalidate many of the assumptions that the Federal Insurance Administration used in its 1979 study?

Mr. Palladino.

Mr. **Palladino**. Mr. Chairman, the 1979 study was not based on any particular set of technical factors, but rather as I understand it, it was based on a rather arbitrary set of assumptions such as so many people being evacuated, and so many people having been permanently displaced. As a result one can't go back and say that because of the improved technology, we can change those assumptions. So the assumptions were independent of the technical background. And I think the study came up with a $17 million potential damage loss.

Now with regard to what the figure is or might be, I guess I should limit myself to a few general remarks. It's very difficult to come up with a specific number because one can define a whole spectrum of accidents with increasing consequences but decreasing probabilities. One can define accidents in which you have negligible releases even though there's severe core damage. One can define accidents that have moderate releases and one can go all the way up to the unmitigated releases.

And I shy away and resist the temptation to pick a number, except to say it's in the billions. Now where in the billions, it would be pure speculation on my part. But I think it would be less than the $17 billion given in the 1979 report.

The CHAIRMAN. Before I ask the other Commissioners if they have any response to the question—and I do seek that if indeed there are other responses—I wonder if you could distinguish in the response that amount of money which would be necessary immediately to pay immediate claims, and that which might be necessary in the longer term.

Mr. PALLADINO. Well, that's one of the problems that's difficult to cope with, because we don't have a great deal of experience of comparing the amount of instant fatalities or injuries to long-term fatalities or injuries. And that's one of the reasons that makes me support the concept of a continuing retrospective premium each year, because it avoids having to prejudge that at the time of the accident.

Now I know I'm begging the question, but that's because I don't really have a good answer, Mr. Chairman.

The CHAIRMAN. Mr. Roberts, any comment?

Mr. ROBERTS. No.

The CHAIRMAN. Mr. Asselstine.

Mr. ASSELSTINE. Mr. Chairman, I would agree with the comments the chairman made on the study that you mentioned, and I don't think you can place much weight on that study. I looked at it after we received your questions. It's fairly abbreviated, anyway, and I think it was just an estimate based upon a set of hypothetical assumptions that are not tied into the technical base.

As far as the amount goes, I think that the view that we expressed in our 1983 report is about right. It's very difficult to say where you draw that line. It's a continuum. The more unlikely accidents, you do have the potential for these very catastrophic accidents running into the billions of dollars in damages. I don't know where to draw that line any better than the Commission did in 1983.

Also, I don't know where to draw the line in terms of how much money you set aside for latent injuries as opposed to paying the early claim. One thing the Commission recommended in 1983, and I think all of us are sticking by, is that at least in terms of the waiver of defenses on statutes of limitations, you ought to look at a 30-year time period rather than a 20-year time period because the best technical evidence is that latent cancer can extend from some of these accidents out to a 30-year time period, and perhaps even beyond that.

Given that length of time, you may have to set aside a fair amount. Now the Act I think takes the proper course, which is that the court has to make that judgment on how much to set aside for the latent injuries down the road, and how much to use to pay the immediate claims.

The CHAIRMAN. Mr. Bernthal.

Mr. BERNTHAL. Mr. Chairman, I don't find a great deal to quarrel with in what my friend Jim has just said. I would say that the one message that came through to me in the recent conversations that we had with the representatives of the insurance pools—and I guess they're going to be here this morning as well—and from my somewhat detached observation of this process over the years, is that there is great value in having a substantial—whatever that might be, $150, $200 million—initial layer of coverage that is handled by those private insurance pools—I'm not sure that's the question you're asking, in fact—but changing that significantly, if that is the question, may in fact be a moot point from what we have heard. They can speak for themselves later. But it does not appear that they're in a position right now significantly to increase the level of protection in that initial layer in any case.

The CHAIRMAN. Mr. Zech.

Mr. ZECH. Yes, sir; Mr. Chairman. I too have reviewed the study you referred to in 1979, and I would agree with my colleagues that I think the assumptions made are very important to look at. I do think it was a hypothetical case. I think the assumptions can be challenged. Times have changed since 1979. I think perhaps a new study might show a different number.

So I don't think you can give an awful lot of credence to the $17 billion figure. My estimate would be somewhat less than that. I don't know the right number, Mr. Chairman. I think we're moving in the right direction in S. 1225, and that's really the important thing. We're increasing that number. Whether it should be above $2 billion or not, I certainly don't know, but I think we're moving in the right direction.

The CHAIRMAN. I just want to return for a moment, because Mr. Asselstine in his prepared statement and again in his comments just now referred to the 20-year statute of limitations. Again, my reading of that and that of my staff is, it says a statute of limitations of less than 20 years cannot be interposed as a defense; but the act itself does not impose a 20-year statute of limitations.

Mr. ASSELSTINE. You're correct. That's correct.

The CHAIRMAN. Senator Evans.

Senator EVANS. I'm not even sure where to start. As nearly as I can detect, the five-member Commission has four positions and it would be helpful, Mr. Chairman, if—and this is only said half facetiously—if you could make a chart showing the individual and important elements in this subject before us, and where each of the Commissioners stand on it, and maybe we would get some benefit out of that. Do you have any hope that there is a chance that the Commission can reassemble itself into a single position on this issue?

Mr. PALLADINO. Well, Mr. Evans, let me comment as follows: We made a study, and we gave the study to Congress, and at the time it was submitted the study was unanimously supported, and I think much of what the study says is still supported. The concept of a continuing retrospective premium was a new approach that I think has some advantages, but I should note that as far as I know nobody has prepared a bill, or introduced a bill based on our approach.

So each one of us is going to have to look at all the bills that are presented and say, well, which one seems to accomplish the objectives that we believe in most effectively. And so, before long, it may be necessary for even those of us who support the continuing retrospective premium to look to other bills, unless one is developed and introduced into the Congress.

Senator **Evans**. Well, it seems to me that, you know, there are two different elements in the hearings we've held. One is to comment on bills that are in front of us; another is to give us advice on how those bills might be modified, changed, or new ones introduced. I think it's quite possible to have bills like that introduced, or to have that concept added to an existing bill, particularly if we thought that was the advice of the entire Commission or a healthy majority of the Commission.

Mr. **Palladino**. Well, that's why I stick to the advice we gave. But at the moment, I could not be optimistic about the Commission reaching a concensus to support the position of continuing retrospective premiums.

Mr. **Asselstine**. Senator Evans, I wonder if I could add a comment? I would agree with the chairman that I think on most of the elements in our report we're all still pretty much in agreement on those. The one area where there now seem to be substantial differences among us is on this question of whether there should be a limitation on liability under the act. And I think it breaks down with basically three positions—that's better than five, but not as good as one.

You have the chairman and myself who say we stick with the 1983 report to have an annual limitation on liability, but you continue to collect funds from the industry until all claims are paid.

You have Commissioner Zech and Commissioner Roberts who say you should have a limitation on liability at somewhere about the $2 billion level, and that should be it absent further congressional action.

And I think Commissioner Bernthal, if I'm not mischaracterizing him, is about in the middle by saying it should be more than $2 billion, perhaps on the order of $5 billion, without being real specific on how you collect the $5 billion. I think it does break down into those three positions.

Mr. **Bernthal**. Mr. Evans, I was just going to comment that I think Jim has summarized it pretty accurately. There isn't that much difference here. I would argue basically two positions. The only difference that I perceive of substance between the position enunciated by Commissioners Zech and Roberts and my own is simply the level of that cap. They've argued in the neighborhood of $2 billion; I've suggested that that's probably not adequate.

I think on all of the other essential points, we're in agreement. And as Jim has just pointed out, I think he and the chairman are essentially in agreement. So I would argue that as a matter of substance, other than this single issue of where Congress chooses to set the dollar limit, there are two positions.

Senator **Evans**. OK. Well, I guess we have to back off to a more fundamental question. Who do you think ought to pay the costs of accidents? Should it be the utilities responsible? Should it be the ratepayers of the utilities? Should it be the general taxpayer of the United States? Who should be responsible?

Mr. **Palladino**. Well, that's a difficult question to answer, but I recognize it's one the Congress has to answer.

Senator **Evans**. Well, it seems to me it's at the very heart of the different positions you've all taken.

Mr. **Asselstine**. That's right.

Mr. **Palladino**. But based on the December 1983 study, it would impose the risk, or the payments on the ratepayers of the utilities that have nuclear powerplants.

Senator **Evans**. But it wouldn't necessarily only go to the ratepayers to the degree public utility commissions would allow it to flow through the ratepayers. Some share might be assumed by the utility.

Mr. **Palladino**. I'm assuming it would flow through, but if it did not flow through, then it would be imposed on the stockholders.

Mr. **Asselstine**. Senator Evans, that's my view, as well, that I think this is a cost of generating electricity by this particular means, and the costs should be borne by those utilities that own and operate commercial nuclear powerplants. My own view is I would leave it to the public utility commissions to determine whether that's an ordinary cost of doing business, and to pass it through just as the Price-Anderson Act did in 1977. But I think that's where the costs ought to be borne.

There is an element of unfairness because the system does make other utilities that do not have an accident pay for the costs to the public for the one utility that has the accident; but I think that in order to provide the necessary funding——

Senator **Evans**. But isn't that essentially the whole concept of insurance?

Mr. **Asselstine**. That's exactly right, and I think that in this case it makes sense.

Senator **Evans**. Mr. Roberts, Mr. Bernthal, and Mr. Zech, by adopting a limit in total dollars at whatever level, are you suggesting that the cost of accidents then to some degree be shared by the general taxpayer as well as the utilities and the ratepayers? Is that a fair concept?

Mr. **Roberts**. Well, Senator McClure articulated it in the following manner, and I think——

Senator **Evans**. I want to know how you articulate it.

Mr. **Roberts**. I agree and endorse his proposal. [Laughter.]

Senator **Evans**. Why don't you repeat it in your own words? [Laughter.]

Mr. **Roberts**. Well, I think this regime allows virtually an immediate $2.4 billion that's available.

Senator **Evans**. But that doesn't answer the question. Who do you think ought to assume the cost of the accident?

Mr. **Roberts**. Well, those utilities who operate nuclear powerplants, and that flows back through to their ratepayers and also their stockholders. But that's a cost of being in the nuclear business.

Senator **Evans**. But to the degree you put a dollar limit and the problem goes beyond that dollar limit, then you're suggesting it's time for the taxpayers to pick up the rest of it?

Mr. **Roberts**. Conceivably, but that would be the hard decision the Congress would have to make after the $2.4 billion under this scheme is exhausted.

Senator **Evans**. Well, Mr. Palladino in his testimony said, the most fundamental pertains to an equity question dealing with this element we've been talking about, that only Congress can resolve. It is argued that this approach would change the balance of equity supporting the Price-Anderson system, shifting to the utility industry from the taxpayers through the Congress the full cost of a catastrophic nuclear accident. I think that's probably an accurate perception, and I'm trying to discern where the Commission comes down.

It seems to me that Mr. Palladino and Mr. Asselstine are saying essentially it should remain a cost to the utilities and the ratepayers, and the other three of you are saying at least to some degree it's partly a taxpayers' responsibility.

Mr. Bernthal.

Mr. **Bernthal**. Senator Evans, I think if we look at the history of Price-Anderson, I personally consider it highly unlikely, especially based on the precedents that have now been established by the Congress in respect to cleaning up chemical spills and messes in this country and in respect for example to compensation of various other injuries, I think it highly unlikely that Congress would simply assume and place on the taxpayer the burden of additional compensation should the limit of Price-Anderson compensation be exhausted. I consider that a very unlikely scenario, but I think it's a scenario that Congress might have to confront.

I think it's unlikely—we're talking about low probabilities here—it's very unlikely that with adequate compensation, or an adequate cap, rather, on that compensation that they would ever have to confront it.

I also want to make a comment about what I think is a good deal of fairly loose talk about unlimited liability. I commented on that briefly in my statement already, but there really are only two versions of unlimited liability that I can see, and neither one of them is really unlimited.

The one version would say let's get out of the business of Price-Anderson and leave this whole thing to the free market, let the utilities seek whatever insurance they can find. We all know that the real compensation under that kind of scenario would be limited just as it is for many other industries that I am sure operate with risk and hazards far greater than their capability to pay in the event of a catastrophic accident.

The other kind of unlimited liability that is occasionally talked about is that of truly unlimited liability. And in that case, such a liability would be unique to the nuclear power industry. And if Congress by its act is going to demand that of one industry, it seems to me then it's only fair and equitable that a similar assessment be made of other industries that may well be operating in hazardous areas beyond their ability to compensate in case of an accident.

Senator **Evans**. Of course no one ever said life was fair.

Mr. **Bernthal**. That's right.

Mr. **Zech**. I know, Senator, you're asking us a question which you recognize is not necessarily our greatest area of expertise, but you deserve an opinion, so I'll be happy to give you my opinion.

I think, to answer your question, it really depends on the circumstances. I'd like to think that the S. 1225 is designed so that it's a layer concept. The first layer, the first funds provided would come from insurance; and the second layer, of course, would come from the utilities themselves involved with nuclear plants; and the third layer would come from the kilowatthour charge that again would come from—belong to ratepayers eventually who benefit from nuclear powerplants; and then the fourth layer, as I see it, if it's a catastrophic event, would again have to come back to Congress and be decided. And then of course in that case, it could be shared by all the American people.

But it seems to me that layer concept does make sense. It tries to put the responsibility on the nuclear utilities and goes from there to the broader responsibilities.

Senator **Evans**. It seems to me that that's a pretty general, I would guess that that's a pretty general feeling all across the board. It's just a question of where you set the limits on those layers. That's the real differentiation.

Mr. **Zech**. That's how I see it.

Mr. **Asselstine**. Senator, in fact Commissioner Zech raises a good point. That is, the provision in the McClure-Simpson bill for this third layer of compensation based on a kilowatthour charge.

If I would have been asked to guess ahead of time whether the industry would have been enthusiastic about such a provision, I would have said no. I may well understand why they've apparently acceded to that provision. I'm not sure that they have, to this day, I should say. But there are a number of imaginative features and mechanisms that one can think about that all point, for me at least, to the point I was trying to make before: In the realistic case that you had a truly catastrophic accident, I would place my bet that the longer term decision by Congress at the point where other compensation is exhausted would be to impose some kind of extended kilowatthour fee. But of course I don't know. Nobody does.

Senator **Evans**. And if you don't know, and we're part of the Congress and I can't tell you what we'd do, so I think that is truly unknowable. I suspect the utilities probably didn't argue too much about the kilowatthour charge because in essence they're not paying it.

Mr. **Asselstine**. That's right.

Senator **Evans**. It's the ratepayers who might have a different idea about that.

Mr. **Asselstine**. That's right.

Mr. **Zech**. That's right.

Senator **Evans**. And they're the ones who are paying it.

Mr. **Asselstine**. The other potential drawback of the mil per kilowatthour fee is if you have a serious enough accident that leads to the shutdown even for a limited period of time of some of the nuclear plants, you don't get that money; whereas, with the deferred premiums that obligation still continues whether the plants are operating or not.

Mr. **Bernthal**. But we're breaking some new ground with that kind of principle. It's a principle that's been established, and if there were any concern about it in the industry, I suspect it's that we already have a Nuclear Waste Act that relies on a kilowatthour fee. Now we're talking about a kilowatthour fee for an additional layer of insurance coverage, and one begins to wonder where that might end. But that's not our problem at the NRC.

Senator **Evans**. Do any of you—Yes, Mr. Roberts?

Mr. **Roberts**. I want to make just a quick comment. I don't think the Simpson-McClure bill contains the figure $2.4 billion. That number—I may have said it, and some of us may have used it—but that's sort of a back-of-the-envelope calculation based on the number of reactors operating today. So that is just a—I don't know whether that number is right or wrong, but it's just an approximation.

Mr. **Asselstine**. I think it assumes more than the number of reactors operating today. I think it's on the neighborhood of 115.

Mr. **Palladino**. I think your comment is correct.

Senator **Evans**. I'll have some other questions—well, one other question before I quit. Do you, starting with Mr. Palladino as Chairman, do you see any different approach than the Price-Anderson, including all of these nuances that we're talking about now, as we face the problem of high-level nuclear waste storage, as opposed to the potential accidents at nuclear plants? Should we use this same protection unchanged? Or should we view the high-level nuclear waste storage as a different animal?

Mr. **Palladino**. Well, it seems to me that again a mechanism ought to be set up to compensate a member of the public who suffers any injury or damage as a result of a nuclear operation, be it with regard to nuclear waste or reactors, and I think the Price-Anderson approach is a very good way to accomplish it.

Mr. **Asselstine**. Senator Evans, I would agree with that.

Senator **Evans**. Is there any different opinion on that?

[No response.]

Senator **Evans**. So you think they can all be lumped together in terms of the same structure?

Mr. **Asselstine**. I would, with one difference. And that is, the source of funds. I agree with the approach taken in S. 1225 to treat high-level waste facilities essentially the same as the commercial facilities in terms of the amount of protection available.

I guess I do have a question about the use of the Nuclear Waste Policy Act, the nuclear waste fund, to pay claims. I have to say that if the Federal Government is taking title to the spent fuel and the Federal Government is deciding what form it's going to be placed in, and it's packaging it, and it's building and operating the disposal facility, I sort of wonder why the Federal Government then is not taking the financial responsibility in the event that it doesn't do the job right.

Senator **Evans**. I suppose it's the question of whether that is an integral part of the cost of creating electricity by nuclear power.

Mr. **Asselstine**. That's right.

Senator **Evans**. And if it is, and if that charge or that cost is not related back to the utilities and through them to the ratepayers, you're not getting an accurate market signal as to the true cost of nuclear power. Isn't that accurate?

Mr. **Asselstine**. That's true. It's just how far down that road you go when the Federal Government essentially assumes complete responsibility for providing the service.

Senator **Evans**. I reserve some other questions, Mr. Chairman. Just one last comment for Mr. Bernthal. I think you had a fascinating comment in your paper on the potential of this not necessarily being sort of an afterthought for the nuclear industry, but perhaps turning into an example that could be used in other potentially equally dangerous industries, and I think that's worth pursuing.

Mr. **Bernthal**. Thank you. I appreciate that.

The **Chairman**. Just with response to the last point that Mr. Asselstine raised about whether or not the funding, since the Government has taken over responsibility for the nuclear waste disposal storage, whether or not the Federal Government ought to take over the financial responsibility for it, I would be interested in hearing from the industry representatives if they have any interest in taking back the responsibility for the storage of nuclear waste. And if they are, then we might indeed allow them to do that. But I haven't heard any such proposals. But I would entertain, or at least explore that possibility if anybody in the industry is interested in making it.

The other side of that is, obviously, if they're not, then the deal must not be unsatisfactory from their perspective.

Mr. **Bernthal**. I think Commissioner Asselstine raises a good point, Mr. Chairman, if I understand what he said correctly. The difference between the nuclear waste repositories, the major difference as a matter of fairness, is that it's the utility that's responsible for building, maintaining, and operating the plant; whereas, for the nuclear waste repository, although the utilities have funded the effort, finally it is the Federal Government that is going to build and operate those.

The **Chairman**. I think that's a very pertinent point. I guess my response is that maybe we made such a good offer to them they couldn't refuse it, so they have all bought off. [Laughter.]

Mr. **Bernthal**. I think that's certainly true.

The **Chairman**. And it might be argued on the other side that indeed we didn't charge enough for that service, because there is no real push yet that I have been able to see for people who desire a private, non-Federal alternative, which would indicate that maybe our fee was too high. But maybe that's something else we can explore to see whether or not that fee has been established correctly.

One of the reasons the fee was established where it was, again just at an arbitrary level, was based on a guess as to what would be necessary to fund a program that would successfully isolate those wastes and package them in a safe manner with a margin of error on the side of making sure we had enough money. And it's my judgment that we do have enough money, that that charge is adequate to do the job that has to be done. If that proves to be inadequate at some point, then we may have to reassess our position with respect to what that charge ought to be. But as long as it's adequate, I don't see any reason why we ought to increase the charge.

Are there further questions?

[No response.]

The **Chairman**. If not, the balance of our questions will be submitted in writing for your response in writing to the record. Thank you very much.

Mr. **Palladino**. Thank you, Senator McClure.

Mr. **Asselstine**. Thank you.

Mr. **Bernthal**. Thank you.

Mr. **Roberts**. Thank you.

Mr. **Zech**. Thank you.

The **Chairman**. We will next hear from State representatives, Ms. van Heijenoort from the State of New Mexico; Mr. Eschels from the State of Washington; and we also have written testimony from Governor Bryan, State of Nevada, for the record. The statements of each of the witnesses will be placed in the record. You are invited to summarize, if you would indeed do that in the interest of time.

[The prepared statement of Governor Bryan of Nevada follows:]

Testimony of

Richard H. Bryan

Governor

State of Nevada

Chairmen Domenici, Senator Hecht, Members of the subcommitte:

The Nuclear Waste Policy Act of 1982 (the Act) places responsibility for constructing, operating and maintaining a repository for civilian high-level radioactive waste and spent nuclear fuel on the Department of Energy. The President has now decided to integrate defense waste in those repositories. The Act also places responsibility for transportation to the repositories on the DOE and authorizes the construction and operation of other nuclear facilities under specified circumstances. But the Act is silent about liability arising out of the federal government's waste program.

Under Section 116(a) of the Act, DOE notified me that a potentially acceptable site for a waste repository existed in Nevada at Yucca Mountain, on and adjacent to the department's Nevada Test Site. Since then, DOE has published its Draft Environmental Assessment of the Yucca Mountain site which identifies that site as one of DOE's three preferred sites for characterization and possible development.

DOE has executed approximately 70 contracts with the owners and generators of high-level waste and spent fuel and has agreed to accept all high-level waste and spent fuel of domestic origin generated by the reactors specified in the agreements, provide transportation for such material to a DOE facility and dispose of it. These contracts also include a representation that DOE will include an indemnity agreement based on the Price-Anderson Act in DOE's award of contract for the operation of any DOE facility for the disposal of high-level waste and spent fuel. The indemnity agreement will apply to nuclear accidents at the repository or in the course of transportation to or from the repository.

DOE indemnity agreements generally have provided that any person found liable for a nuclear accident arising out of or in connection with the contract activity would be indemnified by the DOE. I assume that, under the current plans of the Department of Energy for its administration of the nuclear waste program, all of its contractors would be so indemnified.

It is, however, unclear whether the liability of the U.S. Department of Energy for injury arising from in its high-level nuclear waste program is covered by the Price-Anderson Act. The better conclusion is that it is not. We know that, at the current time, the U.S. Department of Energy is not prepared to admit that the federal government is wholly and finally liable with respect to nuclear waste caused injuries. In the negotiation for a consultation and cooperation agreement between the Department of Energy and the State of Washington, for instance, the Department refused to so agree.

As you probably know, DOE late last year denied Nevada's request for funding to pursue independent investigations of the Yucca Mountain site and that issue is now in litigation. I do not anticipate that DOE will be any more likely to grant my request that DOE accept full liability for injuries arising from its nuclear waste program without the clear direction from Congress to do so.

In the NWPA, Congress found that "the Federal Government has the responsibility to provide for the permanent disposal of high-level radioactive waste . . . in order to protect the public health and safety and the environment . . . ." The Act established a program for the selection of the first two repository sites. Because the national nuclear waste program will be resolved by the selection of a repository site in one, and perhaps two, states, what was a national problem in 1982 will have become a single or two state problem by the end of the century. During the interim, of course, other states through which high-level waste will have been transported will also have borne a portion of the national burden.

Because a host state will be serving the entire nation, I believe it is incumbent upon Congress to declare that the federal government will be wholly liable for any claims arising from the conduct of its high-level nuclear waste program. Inasmuch as the responsibility for permanent disposal of high-level waste is federal, liabilities arising from that federal activity should also be federal.

Congress' decision to transfer title to high level nuclear waste and spent fuel to the federal government, prior to transportation of that waste to a repository or monitored retrievable storage facility, suggests Congress' intention that the federal government would be ultimately and fully liable, rather than only to the extent of Price-Anderson aggregate indemnification. The standard common law tort principle is that ownership (control) and liability go hand in hand.

I believe that the Department of Energy should be liable for the injuries caused by accidents of its contractors in the high-level waste disposal program. This liability should be declared as a matter of federal statute. Similarly, I believe that the DOE should be directly liable for injuries caused by its own accidents. Also, DOE should be liable for injury arising out of accidents caused by employees of other governmental entities, including the State of Nevada, which would not have occurred but for the DOE nuclear waste program. A statutory scheme should be established to provide for payment of claims made directly to and paid directly by the U.S. DOE. The concept of liability should be strict liability.

I feel that the public policy for providing a federal government guarantee that all injuries arising from the waste program will be recompensed is different than the policy for which Price-Anderson was originally enacted. That policy was the promotion of the private development of nuclear power by removing one of its economic impediments while at the same time providing the public with some compensation in the event of a catastrophic nuclear incident. The same policy of promoting the private development of nuclear power was recognized by the passage of the Nuclear Waste Policy Act. But the public policy which gives rise to our proposal that the federal government be wholly and strictly liable for any injury arising out of the nuclear waste program is the policy that the citizens of no state should be called upon to bear the entire burden of a program inuring to the national benefit. To the contrary, those who participate in the benefit should bear the cost of any injuries arising from the program from which the benefit is derived. Nevada's citizens use no nuclear-power-generated energy and get no benefit from the waste program. There is no sound reason to ask them to carry the burden of hosting a repository without a guarantee of absolute recovery for any injury or loss.

There is another important distinction between the nuclear power industry Price-Anderson scheme and DOE's nuclear waste program liability exposure. The nuclear power industry has an economic incentive to avoid accident. No incentive, other than exposure to liability, causes the Department of Energy to pursue a nuclear waste disposal program with the greatest care to public and environmental safety. Indeed, the NRC is charged with oversight of that issue through licensing, but that, of itself is not a DOE incentive. The short history of DOE's activity since passage of the NWPA is one of total mission orientation.

Congress should have no reluctance to declare unlimited strict liability for injuries arising from the waste program unless it has concern that DOE cannot or will not conduct the program to avoid public or environmental injury. If Congress is so concerned, then it should, of course, compel changes in DOE's program.

I advocate that the Department of Energy be statutorily strictly liable for nuclear waste incidents arising out of the transportation of waste, development and operation (characterization, construction, waste placement and closure) of a repository or other waste facility, or failure of a repository or other facility to isolate waste. Clear DOE liability would dictate full compensation to the extent of any claim not fully recompensed by the insurance or indemnification coverage otherwise provided by the Price-Anderson Act. In other words, strict liability without limit.

Under Nevada law, liability for injuries arising from the use of radioactive materials is strict and unlimited. I believe that this is the conclusion which would be reached under most state's tort laws. Consequently, I see little variance from state tort law in the establishment of strict liability for the federal government in the same area.

Federal government "indemnification" for contractors and states for their nuclear waste program accident liability and a statutory limitation on the government's indemnification of other parties' liabilities, as well as on DOE's own liability is not sufficient. Because that is the result under S. 1225, I do not support the waste related portions of that bill.

I believe that the liability issues arising in the nuclear waste context are sufficiently dissimilar from those in the nuclear power industry. A separate title of Price-Anderson should be developed to address the unique liability of the federal government. Language accomplishing this is attached to my testimony.

As you can see, what I advocate is really in the nature of an amendment to the Nuclear Waste Policy Act, rather than to the Price-Anderson Act. However, I am cautious, as are you, of opening the Nuclear Waste Policy Act to amendment at this time. Inasmuch as the issue, liability, is also a Price-Anderson issue, I believe it is appropriate to address the nuclear waste issue in the Price-Anderson context.

I thank the Committee for the opportunity to express my views on this important subject.

The **Chairman**. Ms. van Heijenoort.

STATEMENT OF LAURE van HEIJENOORT, GENERAL COUNSEL, ENVIRONMENTAL IMPROVEMENT DIVISION, STATE OF NEW MEXICO

Ms. van Heijenoort. Thank you very much, Senator McClure, members of the subcommittee.

I listened with interest before to the comments of the Department of Energy in response to Senator Bingaman's question about the inclusion of the WIPP project. As I understand it, they seem to be saying that although there has been an administrative decision to exercise discretion to include the WIPP project in Price-Anderson, that decision is not irrevocable, and certainly a future administration could change that.

The State of New Mexico would like to have something a little more solid than administrative discretion to rely on, and we'd like a specific statement in any amendment to Price-Anderson, whether it's this bill or another one that passes, that includes the Waste Isolation Pilot Plant by name. That project is unique. It's the only repository of transuranic and high-level waste that is not licensed by the NRC, and we think that gives it a little different status than some of the other projects.

I've attached to my testimony the draft for some additional language that I think would be helpful in clarifying and broadening the scope of the discriptions of the repositories that would be covered by the act.

One of the problems I think that needs to be addressed is that there is no clearcut definition of low-level, transuranic, and high-level waste, and there's no clear line of demarcation. Not only do people not know where to draw the line, they're not sure what color ink to draw it in, because there are different types of definitions floating around, some of which are based on numerical standards relating to levels of radiation emitted, and some are based on source.

I would suggest that there be included in the bill language directing NRC to define the terms, if low level is going to be excluded from the provisions of Price-Anderson, through the rulemaking process with input from the States, and that these definitions be binding on all Federal agencies.

I am also concerned that the proposed bill covers NRC licensees, which of course would not include the WIPP, and covers DOE contractors, but does not include actions of DOE itself. I'm concerned about that, because DOE is essentially running the project at the WIPP site, and it seems to me that we could run into serious problems if a DOE employee is responsible for the precipitating action of a nuclear incident.

I'll leave it at that, and I'll take any questions that you might have concerning the WIPP project and our concerns.

[The prepared statement of Ms. van Heijenoort follows:]

TESTIMONY OF

VAN HEIJENOORT, GENERAL COUNSEL, ENVIRONMENTAL IMPROVEMENT DIVISION

STATE OF NEW MEXICO

BEFORE THE

SENATE ENERGY AND NATURAL RESOURCES COMMITTEE

ON

ENERGY RESEARCH AND DEVELOPMENT

JUNE 25, 1985

I am testifying before you on behalf of the State of New Mexico and the Director of the Environmental Improvement Division, Denise Fort. I appreciate the opportunity you have given me to comment on Senate Bill 1225.

New Mexico is the host state to the Waste Isolation Pilot Plant Project (WIPP) near Carlsbad. WIPP will soon become the nation's first deep geologic nuclear waste repository. Construction is about 65 percent complete and the first radioactive waste shipments are anticipated in October of 1988. Estimated to cost about 2.5 billion dollars over the thirty years of its operational life the WIPP will ultimately contain about 7.9 million curies of transuranic wastes and serve as a research and development facility for about 17 million curies of high level wastes. The high level wastes will be removed prior to repository closure in accord with the current "mission" statement contained in the State/DOE Consultation and Cooperation Agreement. With the WIPP facility so close to operational status, the State is acutely aware of the problems and potential hazards that this repository poses to all our citizens.

Senate Bill 1225, which would amend that portion of the Atomic Energy Act of 1954 popularly called the Price-Anderson Act, addresses many but not all of our concerns.

1. Inclusion of WIPP in Price-Anderson Coverage

The bill extends Price-Anderson coverage to "activities . . . involving the storage or disposal of spent nuclear fuel, high-level radioactive waste, and transuranic waste . . ." (p. 8, lines 6-10). We welcome the specific inclusion of waste repositories. To ensure inclusion of the WIPP site, we recommend that clarifying language be added. Our recommendations on this point are attached hereto as Exhibit "A". Our amendment to the bill would clarify that Price-Anderson applies to all repositories regardless of whether the nuclear waste received is of commercial or military origin, high or low level character. Also, a repository such as the WIPP would not be excluded merely because it is not NRC licensed or because it is experimental.

2. Transportation of Nuclear Waste to Repositories

We support the inclusion of transportation of nuclear waste to repositories in Price-Anderson. The recommended language in our exhibit would extend coverage to transportation of low-level waste. One reason for including low-level waste is that there is no generally accepted definition that precisely differentiates between the various levels of waste. If low-level were excluded from Price-Anderson coverage, disputes might arise as to the character of particular material. It might also be appropriate to include in the bill a directive to the NRC to promulgate regulations defining the terms. State input would, of course, be part of this process. Other federal agencies should be bound by the definitions. One problem has been the inconsistent use of terms by various agencies.

3. Inclusion of Department of Energy Activities

The bill as drafted would apply only to activities undertaken by the Department of Energy contractor and Nuclear Regulatory Commission licensees involving nuclear materials. The act of a DOE employee which precipitates a nuclear incident is not covered. If the DOE will not perform any activities that could lead to an incident, inclusion in Price-Anderson will not pose an additional risk to the government. If the agency's employees do get involved on such activities, the states and the public deserve the same level of protection they would get for contractor and licensee activities.

4. Unlimited Liability for Defense Related Activities

The approach to liability limits taken in SB1225 is a laudable improvement over the outdated limits currently in place. Approximately $2.4 billion would be available per incident. The amount would be less if the approximately twenty nuclear power plants currently scheduled to come on-line are not able to do so or if existing plants go off-line at a rate higher than expected. The amount available for nuclear incidents involving non-commercial wastes would be the same, although the source would be different. The limit seems large and would undoubtedly be sufficient for the most probable nuclear incidents. But if a worst-case disaster were to occur, the amount would be woefully inadequate. The cost of reclaiming air, soil and water and replacing contaminated facilities could more than use up available funds, with no money left for personal injury claims that might not appear for twenty years.

Arguments have been made that a Congressional elimination of the limits of liability under Price-Anderson would conflict with the provisions of the Anti-Deficiency Act, 31 U.S.C.S. § 1341 et. seq. We disagree. The federal government does not impose limits on liability levels for most types of claims that can be asserted against it, even though it has established, by statute, procedures and time periods for the filing of claims and commencement of actions. The fact that sufficient money may not have been appropriated to cover a judgment would affect the process of collecting on a judgment, but not the validity of the judgment. The government does not appropriate money in advance to cover all possible liabilities that it faces; it appropriates money as the need arises. The Anti-Deficiency Act only prohibits an officer or employee of the United States from creating an obligation that exceeds an appropriation. Here we are not concerned with the administrative creation of a debt. Rather we are concerned with a Congressional decision to limit its exposure to liability for its activities and those of its contractors. The object of the Anti-Deficiency Act is to prohibit federal contracting beyond limits set by Congress; it does not purport to limit, for example, that liability to an amount appropriated by Congress for the payment of claims.

5. Statute of Limitations

Price-Anderson currently limits the time in which suit may be instituted in the event of an extraordinary nuclear occurrence to three years from the date a claimant knew or reasonably could have known of his or her injury and its cause, but in no event more than twenty years after the date of the nuclear incident. 42 U.S.C. § 2210(n). We think that the twenty year outside limit should be removed because many of the illnesses associated with radiological hazards take longer than twenty years to become apparent. The cancers most commonly associated with radiation exposure, other than leukemia, such as lung, liver, kidney, bone and stomach, generally do not become manifest for 20-30 years after exposure. If an outside time limit is thought to be necessary, the twenty year figure should be changed to thirty years and thereby more accurately correspond to manifestation time frame.

6. Strict Liability

Price-Anderson currently provides strict liability for extraordinary nuclear occurrences for production and utilization facilities and certain NRC contract activities. 42 U.S.C. § 2210(n). The bill would extend the coverage of this provision to repositories. We think that strict liability ought to be the standard for any nuclear incident and that it is confusing to have two standards. It is certainly likely that a court would apply strict liability to an ultrahazardous activity, such as the handling of nuclear materials, under tort law.

PROPOSED AMENDMENTS TO S.1225 TO ASSURE THAT WIPP IS COVERED

.including both commercial and defense nuclear waste repositories and related activities.
volving activities ^ under the risk of public liability for a substantial incident.

"(B)(i)The authority conferred upon the Secretary pursuant to subparagraph (A) to enter into agreements of indemnification with contractors shall include contracts entered into by the Secretary for the purpose of carrying out such activities as the Secretary is authorized to undertake, pursuant to
on a permanent, temporary or experimental basis
this Act or any other law, involving the storage or disposal ^ of spent nuclear fuel, high-level radioactive waste, or transuran-
or low level waste or any combination thereof.
ic waste ^ including the transportation of such materials to a storage or disposal site or facility, and the construction and
whether or not such facilities or activities are licensed by the Commission.
operation of any such site or facility. ^ For all such activities.
the authority conferred upon the Secretary pursuant to subsection 170 d. (1)(A) shall be the exclusive means of indemnification under this section.

"(ii) For the purpose of compensating...SAME

Exhibit A

PROPOSED AMENDMENTS TO S.1225 TO ASSURE THAT WIPP IS COVERED (CONT'D)

financial protection required of licensees pursuant to subsection 170 a., from the nuclear waste fund established pursuant to section 302 of the Nuclear Waste Policy Act of 1982 (42 U.S.C. 10222).

"(iii) Public liability claims arising out of activities involving the storage or disposal of all other spent nuclear fuel, high-level radioactive waste, or transuranic waste not specified in clause (ii), including but not limited to national defense wastes, including the transportation of such materials to a storage or disposal site or facility, and the construction and operation of any such site or facility, shall be compensated in accordance with the provisions of this Act, and from the same source of funds applicable to all other contractors indemnified pursuant to this subsection.

The **CHAIRMAN**. While we are hearing from Mr. Eschels, I wonder if you would look at a copy of S. 1225. Look on page 21, section 9(a), "Definitions" and see if that does not adequately respond to the question of whether the DOE itself is covered.

Mr. Eschels, would you proceed, please?

Mr. **ESCHELS**. Thank you, Mr. Chairman, and members of the subcommittee.

My name is Curtis Eschels. I'm chairman of the Energy Facility Site Evaluation Council in Washington State. By virtue of that office, I'm also a member of the nuclear waste board which is our State's body with responsibility over high-level radioactive waste disposal. I'm also a special assistant to Washington's Governor, Booth Gardner, and my appearance today is as his representative. I've also discussed our testimony with representatives of Governor Bryan in Nevada. They authorized me to tell you that the State of Nevada joins in the recommendation that I will make shortly. With me at the table today is Jim Davenport. He is engaged by the State of Nevada and is here to amplify and discuss questions that may be put about the full liability or full compensation questions that you raised earlier, Mr. Chairman.

Governor Gardner wishes to thank the chairman for allowing us to testify today. Unfortunately, other activities precluded his being here personally. I do have a statement from Governor Gardner which I have submitted for the record, Mr. Chairman.

The **CHAIRMAN**. It will be placed in the record in full.

[The prepared statement of Governor Gardner of Washington, follows:]

TESTIMONY OF BOOTH GARDNER, GOVERNOR
STATE OF WASHINGTON

to the
SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
OF THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

June 25, 1985

Chairman Domenici and Members of the Subcommittee:

Thank you Mr. Chairman for inviting me to present my views to your Subcommittee. Earlier this month I had the opportunity to provide my views on the Nuclear Waste Policy Act of 1982 (NWPA) to Interior Committee Chairman Udall's Subcommittee on Energy and the Environment.

My principal objective today is to again emphasize the need for Congress to address the issue of the federal government's liability for injuries, damage and costs relating to nuclear accidents that may be incurred in the implementation of the NWPA. (Please note that the views expressed herein are limited to NWPA considerations and do not relate to the Price-Anderson Act as it applies to commercial power plants or non-NWPA Department of Energy contractors.)

Before doing so, however, I want to take a few moments to describe the backdrop against which my views on that subject have been formed.

Few states, if any, have participated more fully than Washington in the various elements of NWPA's deep geologic repository siting program for disposal of high-level wastes. Our state's extensive involvement, beginning at the inception of the federal repository program in 1983, has been triggered primarily by two actions of the federal government. First, the Department of Energy in early 1983 determined that Washington State was one of six states with a "potentially acceptable site" for a repository located within its boundaries. Second, in December, 1984, shortly after I was elected governor, the Department of Energy announced preliminarily that a repository site in Washington was one of three proposed for "site characterization"--the last major step before presidential selection of one of them as the location of a national site for disposal of high-level radioactive wastes.

As a result of this second federal action, our state has markedly increased its efforts to ensure that all of our citizens are fully protected as each phase of the NWPA process develops.

While Washington has been engaged in a wide range of NWPA activities, one activity is worthy of special mention--the Consultation and Cooperation Agreement process. Section 117 of NWPA provides for the execution of a "Consultation and Cooperation" (C&C) agreement between a state and the Department of Energy. That agreement sets forth the procedures that the two bodies will follow involving a broad range of subjects pertaining to state participation in the various program elements of NWPA.

Over the last two years, Washington, alone among the several states, has been involved in negotiations with USDOE on the terms of a "C&C" agreement. Although no agreement has been executed, this negotiation process has been very instructive to our state in terms of developing a far better understanding of the NWPA.

One of the benefits of these C&C negotiations, relevant to today's hearing, is that they caused our state--its executive branch, its legislature and its citizenry generally--to examine carefully the issue of liability for injury arising from the implementation of NWPA's repository program. This examination revealed, first, that NWPA itself does not address directly the "liability" issue, either expressly or implicitly. Second, the indemnification and insurance program embodied in the Price-Anderson Act--the program relied upon by USDOE to resolve the "liability" issue--was not designed with the unique repository program of NWPA in mind. The Act's applicability to the NWPA program is, at best, unclear. Furthermore, even if the Act is indeed applicable, serious questions were raised as to sufficiency of the indemnification and insurance program of Price-Anderson as a satisfactory resolution to the NWPA program.

In sum, we are convinced that the national policy pertaining to federal responsibilities and damages arising from accidents under the high-level nuclear waste repository program is in urgent need of further definition by Congress.

Recommendation

It is against this backdrop of experience that I turn directly to the issue of federal policy as it pertains to liability for nuclear incidents arising from implementation of the NWPA. In my view, Congress should be guided by the following fundamentals for all NWPA incidents involving nuclear wastes:

1. Strict, absolute and unlimited federal liability should be the fundamental of federal policy.

2. Full compensation should be provided, regardless of fault, to all victims of any nuclear incident arising under the NWPA program.

3. Consistent therewith, states and other entities should be "held harmless" from any liabilities that they might otherwise incur through any incidental role they may have in NWPA's implementation.

My position is founded on the simple proposition that the national government should shoulder the full liability burden as to those federal programs of high danger that have historically embodied an overriding, dominant federal role and direction. No federal initiative, dominated as it is by federal ownership and regulatory interests, more clearly falls into this category than the comprehensive set of federal "nuclear" programs developed by Congress over the past forty years.

This Subcommittee is now considering means of resolving federal "liability" policy. Each of these proposals builds upon the Price-Anderson Act. The question is whether the existing program of that Act is the appropriate vehicle for developing a liability and compensation scheme for accidents arising under the NWPA. It is my recommendation that, as an alternative, careful review should be given by Congress to the development of a liability and compensation program, based on the fundamentals described earlier, that is specially tailored for accidents arising under NWPA.

The Price-Anderson Act indemnity scheme was developed primarily to resolve liability issues under the commercial reactor program, a long-established program in which the risks of accident have been extensively examined. There is no similar background of understanding for NWPA's program for it is both new and unique. Likewise, while the Price-Anderson Act provides broad coverage of catastrophic occurrences arising from the commercial program, it does not appear to provide similar coverage to "slow leak" occurrences that are more likely associated with NWPA's repository program. In this context, it is not altogether certain that the existing Price-Anderson framework, even with the amendatory ideas now before you, will satisfy the federal liability requirements consistent with the NWPA fundamentals previously set forth.

An essential feature of any liability program designed for NWPA accidents includes funding sources. In my view, the major source of funds to satisfy claims should come from the Nuclear Waste Fund established by the NWPA. However, it would also appear appropriate to provide for a supplemental source, when the NWPA fund is insufficient, supplied by general tax revenues. My staff is not sufficiently informed to provide a precise description of such a two-pronged funding arrangement at this time. However, we have some preliminary thoughts and I would welcome the opportunity for my advisors to explore this approach with you and your staff.

Final Comments

The state of Washington is committed to participate fully and in good faith in the repository siting program established by Congress in the NWPA. In this regard, I note that Washington has very significant, unresolved concerns as to the merits of siting a deep repository at Hanford, Washington. It is my position in NWPA's implementation, that any acceptance of a repository at Hanford must satisfy three conditions: (1) it must be demonstrated to our satisfaction that it is safe; (2) it must be superior to any other site; and (3) it must be acceptable to the citizens of Washington.

Congress has determined, as primary policy, that state participation in NWPA's repository planning and development programs is "essential" if these programs are to be successfully completed. This mandated state participation has no real chance of being accomplished unless the liability issue I have addressed is resolved by Congress to the satisfaction of the various states.

In sum, the United States must take the full responsibility, absolutely and without regard to fault, for all injuries and damages arising from radioactive releases in the implementation of the NWPA. Acceptance of this responsibility by the federal government is essential to NWPA's successful implementation.

I close by pointing out that NWPA's repository program, while dominated federally in its administration, contemplates implicitly a program of shared responsibilities and burdens between the federal government and various states. Thus, a single state, the one selected as host for the deep geologic repository, will shoulder a very heavy burden not only on behalf of all of its sister states but in support of valuable national interests as well. Similarly, "corridor" states hosting nuclear wastes while in transit will also carry more than their fair share of NWPA's program. When balanced against this heavy state involvement, it is my position, as governor of a directly affected state, that a program of strict liability borne by the federal government is eminently fair and reasonable.

I look forward to working with you, Mr. Chairman, and members of your subcommittee in the conduct of your tasks in this very important area of high-level nuclear waste disposal.

Again, I thank you.

STATEMENT OF CURTIS ESCHELS, OFFICE OF THE GOVERNOR, STATE OF WASHINGTON, ACCOMPANIED BY JIM DAVENPORT, ON BEHALF OF THE STATE OF NEVADA

Mr. ESCHELS. I have a few brief remarks to summarize the Governor's position. Let me first point out that we take no position on the application of the Price-Anderson Act to commercial powerplants. Rather, our testimony today arises from our State's designation as one of the first so-called six first-round States selected by the U.S. Department of Energy under the Nuclear Waste Policy Act.

The CHAIRMAN. We didn't really intend to have six rounds, and I hope we don't. [Laughter.]

Mr. ESCHELS. I think we'd be worn down far too far.

At any rate, for consideration as the location of the Nation's high-level nuclear waste repository. For that reason, we have participated actively in many of the act's programs. For example, we have engaged in extensive consultation and cooperation negotations with the Department of Energy contemplated by section 117 of NWPA.

Chairman Domenici is already familiar with New Mexico's experience in establishing cooperation negotiations with DOE. In fact, much of my testimony, which centers on our State's concerns with incidents at repositories under the Nuclear Waste Policy Act could apply to the situation in New Mexico.

In Washington, as was pointed out earlier, our negotiations over a C&C agreement came to a standstill largely because of DOE's stated inability to commit to the levels of liabilities which our negotiators insisted be borne. They had the full backing of Governor Gardner, the previous Governor, and both houses of the legislature.

For the purposes relevant to this hearing, our experience has provided us with a very important recommendation. Congress, we feel, must with dispatch address the problems of liability and compensation for damages and injury related or arising from the disposition of high-level radioactive waste under NWPA.

More precisely, Congress must enact legislation establishing a policy of strict, absolute, and unlimited Federal liability that compensates all victims of any nuclear incident arising under NWPA's repository programs. DOE we feel should be liable for injuries caused by accidents of its contractors, those caused by its own accidents, and those arising from accidents caused by other governmental entities which would not have occurred but for the DOE nuclear waste program.

In our view, many of the NWPA's programs will never be achieved without such legislation. For example, no consultation and cooperation agreement between the Department of Energy and the State as provided by the act will ever be consummated without that legislation. Indeed, the basic objective of the NWPA, the operation of a repository, is placed in peril if an unlimited strict liability policy is not enacted in the near future.

In simplest terms, the NWPA cannot be successfully implemented unless, first, the general public is convinced through credible implementation of the NWPA that a repository is completely safe; and, second, the public is fully protected against all damages and injuries arising from a nuclear incident involving the repository program.

Most bills now being considered by the Congress on Federal liability for nuclear waste accidents relate to the Price-Anderson Act. That 1957 enactment may be the vehicle for establishing an unlimited strict liability for activities under the Nuclear Waste Policy Act. However, there are certain differences between incidents at powerplants and waste repositories which we believe indicate that a better approach may be to tailor a program by amending the Atomic Energy Act outside of Price-Anderson's framework that is specially designed for both the comingled commercial and defense waste repository program now being implemented under NWPA, and the dedicated defense waste repository in New Mexico.

My fundamental message, regardless of the vehicle used, is that a strict liability full compensation policy must be enacted if these nationally important programs have any change of being successfully implemented.

I want to thank you again for the opportunity today, and we look forward to working with your committee in the future.

[The prepared statement of Mr. Eschels follows:]

STATEMENT OF CURTIS ESCHELS

OFFICE OF THE GOVERNOR

STATE OF WASHINGTON

My name is Curtis Eschels. I am Chairman of the Energy Facility Site Evaluation Council of Washington. In that capacity I am a member of the Nuclear Waste Board, which is our state's body with responsibility over high-level radioactive waste disposal. I am also a Special Assistant to Washington's Governor, Booth Gardner. My appearance today is as his representative.

Governor Gardner wishes to thank the Chairman for allowing us to appear. Unfortunately, other activities have precluded him from appearing personally. I do have a statement by Governor Gardner which I submit to you, Mr. Chairman, for inclusion in the record.

I do have a few brief remarks that summarize the Governor's position.

Let me point out at the outset that we take no position on the application of the Price-Anderson Act to commercial power plants.

Our testimony today arises from our state's designation as one of the six "first round" states selected by the United States Department of Energy, under the Nuclear Waste Policy Act (NWPA), for consideration as the location for the nation's high-level radioactive waste repository. For this reason, we have followed carefully that 1982 Act's implementation. Indeed, we have participated actively in many of the Act's programs, e.g., we have engaged in extensive consultation and cooperation negotiations with the Department of Energy as contemplated by section 117 of NWPA.

The Chairman is already familiar with New Mexico's experience in establishing cooperation negotiations with DOE. In fact much of my testimony, which centers on our State's concern with incidents at repositories under NWPA, could apply to the situation in New Mexico.

In Washington, our negotiations on a Consultation and Cooperation Agreement came to a stand-still, largely because of DOE's stated inability to commit to the levels of liability our negotiators —with full backing of Governor Gardner, the previous governor and both houses of our legislature — insisted be borne. For purposes relevant to this hearing, our experience has provided us with a very important recommendation.

Congress must, with dispatch, address the problems of liability and compensation for damages and injury arising from the disposition of high-level radioactive waste under NWPA. More precisely, Congress must enact legislation establishing a policy of strict, absolute and unlimited federal liability that compensates all victims of any nuclear incident arising under NWPA's repository programs. DOE should be liable for injuries caused by accidents of its contractors, those caused by its own accidents, and those arising from accidents caused by other governmental entities which would not have occurred but for the DOE nuclear waste program.

In our view, many of the NWPA's programs will never be achieved without such legislation. For example, no Consultation and Cooperation agreement between the Department of Energy and a state, as provided by NWPA, will ever be consummated. Indeed, the basic objective of the NWPA — the operation of a repository — is placed in peril if an unlimited, strict liability policy is not enacted in the near future.

In simplest terms, the NWPA cannot be successfully implemented unless (1) the general public is convinced through credible implementation of the NWPA that a repository is completely safe, and (2) the public is fully protected against all damages and injuries arising from a nuclear incident involving the repository program.

Most bills now being considered by the Congress on federal liability for nuclear waste accidents relate to Price-Anderson. That 1957 enactment may be the vehicle for establishing an unlimited, strict liability policy for NWPA activities. However, certain differences between incidents at power plants and waste repositories indicate that the better approach may be to tailor a program outside of Price-Anderson that is specially designed for both the commingled, commercial/defense waste repository program now being implemented under the NWPA and the dedicated defense waste repository.

My fundamental message, regardless of the vehicle used, is that a strict liability, full compensation policy must be enacted if these nationally important programs have any chance of being successfully implemented.

Thank you for the opportunity to appear today. We look forward to working with your committee.

The CHAIRMAN. Thank you very much.

Now to return to that other question?

Ms. VAN HEIJENOORT. Yes, Senator McClure. My concern with the language that you indicated is that it puts the Secretary in the stead of a contractor, and we could get into arguments as to whether the Government is acting in its proprietary capacity or sovereign capacity. And I think it may just be a question of doing a little fine tuning on that particular provision.

The CHAIRMAN. Well, certainly it was my intention and my belief in writing that provision that it included the acts of commission or omission by DOE officials to be covered by the provisions of the Price-Anderson. If it does not adequately do that in your opinion, we'll certainly listen to suggestions as to how to more adequately do it. We made no distinction between proprietary or sovereign actions, but there is a waiver of defenses in Price-Anderson, and I had thought that took care of it. If it does not——

Ms. VAN HEIJENOORT. For an extraordinary nuclear occurrence, there is.

The CHAIRMAN. With respect to the last topic, and it's been raised here a number of times by other witnesses or questions, the question of low-level waste. As I understand the public policy that has been expressed in Price-Anderson in the past, and we attempt to continue that policy in its expressions in the bill that's before us now, even though we have broadened it to include activities that were not previously covered by Price-Anderson, we have not broadened it far enough to say that the Federal Government takes responsibility for all nuclear waste regardless of whether or not there is a Federal activity associated with it.

For instance, low-level wastes if placed in a Federal repository would be covered. Low-level wastes not placed in a Federal repository would not be covered. That's where I understand the distinction to be made.

And if that is the distinction, then if by any chance WIPP were used for low-level wastes, or if low-level wastes were comingled, that activity would be covered even though they were low-level wastes, because it is a DOE repository. It's the nature of the repository that determines the coverage, not the nature of the waste.

And one of the reasons that distinction is perhaps important and should be preserved is that, indeed I understand the statements that have been made by Senator Evans, that if you don't include the costs in the activity, then you send the wrong signals to the marketplace. There are a lot of low-level wastes that will never find their way to a Federal repository, for which we have not assumed responsibility as a Federal Government, in which the cost of that repository is a part of the cost of the use of the material, whether it be in industrial applications, or medical applications, the whole question of the non-Federal activity area in which radioactive materials are used is encompassed in that low-level repository which we hope will be solved by compacts between the States that deal with the question of the repositories, the responsibility of the States in which the low-level radioactive wastes are generated.

We have not adopted a Federal responsibility as yet for those wastes. If that is not adequately expressed, I would hope you would identify how we could express it more clearly. And if it is clearly expressed and you disagree with that policy delineation, I would like to have your expression on that, as well.

Senator Evans.

Senator EVANS. Thank you, Mr. Chairman.

For Mr. Eschels, you in your statement suggested that certain differences between incidents at powerplants and waste repositories, you indicate that a better approach may be to tailor a program outside Price-Anderson. In your view, what are those distinctions that would make it necessary to have a separate or a unique procedure, leaving aside for the moment the question of unlimited or limited liability, but are there other things that make it necessary to establish a separate program?

Mr. ESCHELS. We believe that the better approach would be a separate framework outside of the specific Price-Anderson framework. I would give you four reasons that we see. There may be more.

The first is that the types of accidents which are credible which could occur differ between the kinds of activities. That is, it would expect perhaps slow leaks from a waste repository, and a more sudden release from a power plant.

Second, the Department of Energy does not have now the built-in economic incentive that plant owners do to avoid accidents. We believe that that distinction changes the thrust on DOE to where a different approach should be taken.

Third, the U.S. Department of Energy would be the single owner of all of the material that we're discussing; whereas, under the powerplants you have multiple owners, there are several insurers that are all governed by Price-Anderson, but in the waste category all of it belongs to U.S. DOE.

Finally, and this has been pointed out before, one of the policies of the Price-Anderson Act was to promote private development of nuclear power. The Nuclear Waste Policy Act has the same underpinning. However, it goes on, we believe, to say that there's a stronger policy that the citizens of no single state ought to be called on to bear the entire burden of a program which benefits the whole Nation. Rather, we believe that those to whom all of these benefits inure should bear the cost of the injuries arising from the program from which that benefit is derived.

So for those four reasons, we believe that there ought to be a separate but perhaps similar approach taken.

Senator EVANS. It seems to me that at least the fourth one really deals, it seems to me, with the whole question of the liability, whether unlimited or limited, and I understand that differential.

Leaving that aside, it doesn't seem to me that any of the rest of them are reasons that mandate a differential approach. The fact that the types of accidents are different, there are a whole range of different kinds of accidents that can occur in an industrial plant, but it doesn't mean that a scheme for handling the injuries that flow from that need be any different. I really don't understand why that is a necessary reason for a separate approach. The DOE not having an economic incentive to avoid an accident, that's almost saying that no governmental unit at any level cares. I think that that's a little harsh, whether applied to the Federal Government, the State government, or anyone else.

And I'm not sure that a separate fund would create any economic incentives, unless you're suggesting that the funding of all of this be all taxpayer funding rather than a charge against ratepayers. And the fact that the DOE is the single owner seems to me just makes it simpler, rather than making it necessarily different.

I guess I'm not persuaded, at least unless I don't understand those reasons, that any of them—with the exception of the last one, which I understand is a separable problem, the one of liability—but the others, I guess I'm not a great fan of setting up something different and unique unless we have to. I'm not persuaded yet that any of those other three reasons make it necessary.

Mr. ESCHELS. Senator Evans, I think it goes part of the way toward the question of whether there ought to be limited or unlimited liability. I think many of the citizens, many of our citizens, don't have the same confidence that the subcommittee members do in the program as it's being implemented presently.

An expression by Congress of its confidence in DOE would go a long way to ease that uncertainty. Simultaneously, that kind of endorsement would assure, we believe, close oversight by the Congress over the safety of the operation. When there's a direct responsibility somewhat apart from the Nuclear Waste Fund, which is already set up, and all of the mechanism in Price-Anderson, the declaration of an ENO and all of the steps that it takes to get those funds, I think there would be more confidence among the citizens.

Senator EVANS. Do I understand that you're suggesting that if a separate procedure was set up, that the funding of that separate procedure come from the taxpayers from dollar one?

Mr. ESCHELS. No. Let me say that with certainty. No is the answer to that.

Senator EVANS. Then would you suggest that the funding come from ratepayers or utilities to the same extent? Or to a greater, or a lesser extent than suggested by Price-Anderson or, more accurately, the proposals that are now being made to change Price-Anderson?

Mr. ESCHELS. I believe that the ultimate responsibility, that beyond which the bill presently before you doesn't provide, ought to be borne by the Federal Government, and specifically DOE. The reason I say that is the Federal Government has responsibility, by accepting ownership of this material that we're addressing, if it has responsibility it must have full authority to get it safely from where it is to the repository and into the repository.

Only when those two match can they be held accountable. And I think the accountability is one of the things that we're driving at here by having Congress hold DOE strictly accountable not only for the safety of the program and its proper implementation, but to protect the treasury from the kind of risk that an accident could expose it to.

Senator EVANS. Do you believe that the costs of nuclear waste storage are an integral part of the cost of producing nuclear electricity?

Mr. ESCHELS. Yes.

Senator EVANS. Then why shouldn't the ratepayers bear the cost?

Mr. Eschels. I'm afraid I'm going to have to back up to the statement I gave earlier. The fundamental message I came to deliver does not depend on the mechanism or the vehicle that's being used. The fundamental message I'm delivering is that there ought to be full compensation that ought to be provided for in advance so that there will be protection for members of the public, and the side benefit of that is the confidence that it will have in the administration of this program.

Senator Evans. How much confidence will there be in the ratepayers and citizens of any State if no program goes forward? Then the high-level waste will have to be stored, presumably, at the site of each nuclear plant, including those in the State of Washington. Will that create greater confidence in people?

Mr. Eschels. Well, I think you've given me a hypothetical that won't happen, because U.S. DOE has already accepted title and made a commitment that it will accept deliveries from those plants.

Senator Evans. Well, how can they accept deliveries if they don't have any place to put them? I mean, if the State of Washington says no, and the State of New Mexico says no, and the State of Nevada says no, and the other 47 States say no, and the Congress can't override any of them, what's DOE to do?

Mr. Eschels. Senator, what we're attempting to do, I believe, is two things.

The first is, as a State, to review U.S. DOE's work on the repository program and assure ourselves and the public that we represent that the program is being implemented credibly and it will result in a safe repository and transportation system.

Senator Evans. I thoroughly agree with that. I think that is an important and an appropriate thing to do.

Mr. Eschels. Second, there are some who will not be convinced by just that. The question is, Do you trust your government, State or Federal? So as a backup to that, I think there ought to be full protection to the public set up in advance that will cover all of the damages and any injuries that would arise from a nuclear incident.

If they're saying that, OK, you believe this is acceptably safe, I don't accept that, I want it even safer, there comes a point when the leaders have to say this will not be 100 percent safe; what we've chosen to do is protect you against any injuries or damages that are very, very unlikely; but we've set up a mechanism which provides funds so they will be available to you in the very unlikely event, after we've covered all of the other possibilities. That's what our recommendation to the subcommittee is.

Senator Evans. Sometimes the lack of trust extends beyond government to lawyers. We heard a little of that this morning, and the suggestion that setting up in advance a totally unlimited barrel of money would just lead to excessive claims. Do you think there is a danger? We always want to cover all legitimate claims. Do you think there is a potential danger of, you set a target out there that's so large you are going to incur excessive claims and excessive problems? I mean, just from the fact that you have, in the beginning, said we will pay anything that comes along?

Mr. **Eschels**. Let me say first that I'm not a lawyer, not even a tort lawyer. My training is in physics. So with that understanding that you're getting a physicist's view of things——

The **Chairman**. We believe that physics is more predictable. [Laughter.]

Senator **Evans**. You think a court is predictable? [Laughter.]

Mr. **Davenport**. Senator McClure, I wonder if I might respond to Senator Evans' question?

The **Chairman**. Mr. Davenport.

Mr. **Davenport**. Your use of the phrase "the unlimited barrel of money" belies a confusion which is a very easy confusion to hold about what is the distinction between full liability and full compensation.

The position of Governor Gardner of the State of Washington, in which Governor Bryan from the State of Nevada joins, is that there should be a statement of the full legal responsibility of the Federal Government; that there be a statement of the full legal right of the claimant. It is not a position that there be an unlimited barrel of money available immediately at the outset to pay those claims.

In other words, the distinction between "full liability" and "full compensation" is that full liability is a statement of the legal right of the claimant, whereas full compensation is a statement of the practical expectations of the claimant to receive the payment of his legal right.

It is the former which we seek: That the law which you pass states that it will be the Federal Government's responsibility to honor claims in this.

The **Chairman**. But then we just won't pay them.

Senator **Evans**. Yes. I think the one without the other is a pretty hollow victory.

Mr. **Davenport**. The States would indeed like immediate compensation to a reasonably large extent, but it is important that there be created the statement that the Federal Government would be responsible so that, as Mr. Eschels says, the Governors of the States can go to their constituents and say that the Federal Government has agreed it will be the finally responsible party here, and the State Government will not have to be.

But also it is necessary that in collecting on the legal right that there be some fund which is available, and we do not suggest that that fund be so extreme as to be outside of the planning capability of the Department of Energy to plan for its claims.

Senator **Evans**. Do you think the funds suggested by the previous panel are adequate?

Mr. **Davenport**. The proposals for?

Senator **Evans**. Applied to nuclear waste storage?

Mr. **Davenport**. With the claims that are actuarily evaluatable at this time—namely, the transportation type incidents—probably so. It isn't possible—I don't know of anyone who has speculated on what the real cost of a claim for a repository that is in breach might be.

Senator **Evans**. We're not talking about the total cost. We're talking now about what you just suggested, and that's a reasonably large pot of money, and then the assumption of——

Mr. **Davenport**. If the statement of liability was clear, I would say it would be.

The **Chairman**. Would the Senator yield on that point?

Senator **Evans**. Surely.

The **Chairman**. Because I think we're maybe narrowing in on an area of concern which I didn't know existed, and perhaps that's useful; that's the reason we have hearings. Because as I view the statement in 1225, we have unlimited liability. We haven't denied or limited that liability, but we have not created the funding—and that's your second point: What is the compensation?

I guess what Congress can do at any time is say, all right, there was an accident and people were injured, we're not going to pay all the bills.

Mr. **Davenport**. That's correct. They could even do so after the fact.

The **Chairman**. Congress could do so anywhere——

Mr. **Davenport**. That's correct.

The **Chairman** [continuing]. In any instance. I know of only one instance in which there has been any waiver of any immunity and an acceptance of unlimited liability on a guarantee of liability—that's the Federal Tort Claims Act. But we still have the appropriations process that determines whether or not we're going to pay those bills.

Mr. **Davenport**. That's correct.

The **Chairman**. That's why I interjected a moment ago about whether or not you are advocating that the Government accept liability but retain to itself the real decisionmaking responsibility——

Mr. **Davenport**. Fiscal responsibility.

The **Chairman** [continuing]. Decisionmaking, with respect to whether or not compensation will be paid once liability has been determined and the amount of money has been determined. And that's true under the Tort Claims Act, is it not?

Mr. **Davenport**. Yes, that's correct. But what we would advocate in this instance, because the Federal Government has made a determination that it will be responsible for the nuclear waste program in the Waste Act, that the statement of liability be made that there be a fund established through appropriation, either out of the Waste Fund or other sources, to pay immediate claims, which are valid claims honored by the Department as valid claims, and that thereafter to the extent that those funds are inadequate, that the Secretary seek additional appropriations from Congress to pay those claims.

The **Chairman**. Well, that's exactly what S. 1225 does, and does so under better conditions than is normally the case, because it provides for the Government to make that request and requires the President to make the request, not the Secretary, and it requires that the Congress act on that under expedited procedures, not under ordinary procedures. It seems to me that we've done more than you have suggested.

Mr. **Davenport**. I would agree that you have done more than I have suggested on the compensation side, but you have done less on the statement of liability, under my reading of the bill.

The Chairman. Well, I hear what you're saying. I don't read it that way, but I respect your statement.

Senator Evans. Well I think, Mr. Chairman, we are getting to the question then of, is it simply a question of wording in 1225, or any other act that comes forward, as to assumption of liability? It would be helpful if you would tell us explicitly where and how it is inadequate and how it needs to be changed to make it adequate.

Mr. Davenport. We definitely plan to do that. And let me say that I think from my listening to the general discussion here and on the House side, that most parties are in general agreement that the policy of full compensation and full responsibility of the Federal Government is there. Pretty much everyone agrees on that. The question is what language you use to get a certainty that the final, full liability is Federal and that the compensation be adequate, a good system set up.

So I think it's a question of finding the right words, rather than any disagreement on basic policy.

Senator Evans. Or, alternatively, suggesting why 1225 doesn't already have those words.

Mr. Davenport. Correct.

Senator Evans. I have nothing further.

The Chairman. There is still some confusion I think, and let me explore this because I want to lay the premise and then ask you to do something.

First, we have established unlimited liability. That's my view of what S. 1225 does. It provides an initial pool of money to pay that compensation, pay compensation for that liability. It provides a mechanism to provide additional funding if that is not sufficient—and that's for all nuclear accidents or incidents. It provides also a waiver of immunity; we also have under Federal statute a waiver of immunity, a waiver of sovereign immunity, and an opportunity for claimants to file under the limits of State tort claims acts for those claims that are not explicitly covered under Price-Anderson.

Now do you understand that claimants can sue in State courts, or under Federal courts applying the State court tests of limits of liability? Mr. Davenport?

Mr. Davenport. Your question is currently under Price-Anderson?

The Chairman. No.

Mr. Davenport. Or currently under the Tort Claims Act?

The Chairman. No, under specific provisions—under Price-Anderson, the ability to sue in Federal courts under the State standards of liability.

Mr. Davenport. Yes. An action under Price-Anderson would be first against the contractor of DOE named as defendant. Were it brought in State court, it could be removed to Federal court. It could be done in Federal court as well as State court. You're right about that. The law that would be applied——

The Chairman. Using the State statute limits of liability.

Mr. Davenport. The law that would be applied would be the law of the State, as there is no Federal common law tort law. That would mean that you would be using the State substantive law, statutory or case law, in the Federal court system.

The Chairman. Right.

Mr. DAVENPORT. Now if the event which gave rise to that litigation was not an extraordinary nuclear occurrence, you would not have the waiver of defenses provision. You would still have to overcome the Federal Government's defenses under the Price-Anderson law. Then if it did rise to the level of an extraordinary nuclear occurrence, the Federal Government's defenses would be waived.

The CHAIRMAN. Now my understanding is a little different than yours. If the State law has strict liability for the activity, the Federal Government could not assert a claim of sovereign immunity.

Mr. DAVENPORT. If the incident which gave rise to the claim was an extraordinary nuclear occurrence but only——

The CHAIRMAN. I'm talking about the others——

Mr. DAVENPORT. I'm sorry.

The CHAIRMAN [continuing]. Because that's covered by the compensation scheme under Price-Anderson. It's for the ones that are not covered by the compensation scheme under Price-Anderson that the State standard of liability applies in the action against the Federal Government.

Mr. DAVENPORT. This is a difficult question. I'm not sure I know the answer.

The CHAIRMAN. All right, my understanding is this: That if it is an extraordinary nuclear occurrence or above, there is an explicit waiver of sovereign immunity.

Mr. DAVENPORT. That's correct.

The CHAIRMAN. If it is less than that, it is whatever the State law says with respect to liability.

Mr. DAVENPORT. With the Federal defenses left intact.

The CHAIRMAN. No, I think not. Now if you will check that and tell me where you think the law is deficient in stating that, I would appreciate it.

Mr. DAVENPORT. Senator, you have I hope later today in one of your panels a person who is better versed on this subject than I in Omer Brown, and perhaps you could ask him that question.

The CHAIRMAN. Well, I want to ask, too, the witnesses before me now that if you find that not to be the case and you want to ask for changes in the language of Price-Anderson, if you would give me specific language to fix the problem that you perceive, because I'm having a little trouble with my view of what the law is in understanding what your concern is. And the only way I know to really focus on that is to require of you, if you will, to give us a specific fix for what you perceive to be the problem. That will keep you from expressing generalized concerns but never coming to grips with specifics. So if you will do that, please, I would appreciate it.

Mr. DAVENPORT. I'd be happy to.

Ms. VAN HEIJENOORT. Excuse me, Senator McClure——

The CHAIRMAN. Surely.

Ms. VAN HEIJENOORT [continuing]. If I can address just that one point very briefly. Because of the existence of the Atomic Energy Act, I don't think most States have developed law specifically on strict liability with respect to nuclear incidents in the nontechnical term. It may be that one could successfully argue that dealing with nuclear material is ultrahazardous and get a State court or a Federal court in applying State law to apply strict liability, but I don't think we can assume the court would necessarily do that right now.

The **Chairman**. Well, the States have the opportunity and the authority under existing law to act to establish what limits of liability they wish to. Now that's very clear, I think, and I know that the States have been invited to exercise that authority.

Ms. **van Heijenoort**. That's true.

The **Chairman**. Now if the States have not done so, and if they have the authority to do so, that's a separate question.

Ms. **van Heijenoort**. That's certainly true for the statute of limitations issue. I'm not sure it's true for strict liability and the question of what standard one applies in the case.

The **Chairman**. I should perhaps use the term "standards of liability" rather than "limits of liability."

Senator **Evans**. Mr. Chairman, let me just ask one other question of Mr. Eschels. I'm not sure you can remember. As the chairman set forth his understanding of the provisions of 1225 on the unlimited liability—I'm not sure I can repeat precisely what the chairman said—but in listening to those and ensuring that the wording in the act carries out those principles that he was suggesting, do you still feel that it would be necessary to have a separate fund and a separate procedure for high-level waste and the accidents that could occur at a plant?

Mr. **Eschels**. I think a separate fund, no; a separate procedure may be preferable. And I would like to work with your staff and the subcommittee staff to explore that more fully.

Senator **Evans**. It would be helpful to know—and I'm having a little difficulty knowing or figuring out just what kind of differences there are that make it necessary to have a separate procedure. But any specifics would be helpful.

Mr. **Eschels**. I think if we have a more extended conversation than we've had this morning, that should straighten that away. I think Mr. Davenport has something.

Mr. **Davenport**. One difference in system could be, rather than using indemnification where you establish the liability of one party and then have an agreement that the second party, the Department of Energy, pay for the liability that was established in the separate proceeding, that you could have a direct route from the claimant to the Department of Energy which would be reimbursed then by any contractor who in fact might have been liable. That is different than the Price-Anderson system at present, and is much simpler.

Senator **Evans**. Well, would you suggest that that's a pretty good idea to apply generally under Price-Anderson?

Mr. **Davenport**. Yes; I would.

Senator **Evans**. So maybe what you're suggesting is not necessarily a separate scheme, but an altered scheme that would apply to everybody?

Mr. **Davenport**. Excuse me. I wouldn't suggest a change in that overall system as it applies to NRC licensees, but as a total group of DOE contractors. NRC licensees have a much different system, and they have licenses which were granted under that separate system which involves private insurers, and which would probably be upset by a change in that area.

The **Chairman**. Thank you very much for your testimony. I'll look forward to the responses, and also some further written questions that may be submitted for response to the record. Thank you very much.

Ms. **van Heijenoort**. Thank you very much for the opportunity to address you.

Mr. **Eschels**. Thank you for your indulgence.

Mr. **Davenport**. Thank you.

The **Chairman**. And our final panel, public witnesses: Mr. Schmalz; Ms. Kehoe; Mr. Griffith; and Mr. Johnson.

Mr. Schmalz, and again I would suggest to each of you, in turn, your entire written statement will be placed in the record in full, and you're invited, if you can, to summarize that statement.

Mr. Schmalz.

STATEMENT OF RICHARD SCHMALZ, COUNSEL, AMERICAN NUCLEAR INSURERS AND MUTUAL ATOMIC ENERGY LIABILITY UNDERWRITERS

Mr. **Schmalz**. Mr. Chairman, I will try to summarize these remarks greatly, and so it may be a little disconnected, but we'll do our best.

The **Chairman**. Thank you, sir.

Mr. **Schmalz**. I am Richard Schmalz. I am counsel to American Nuclear Insurers and Mutual Atomic Energy Liability Underwriters, the two nuclear pools known as ANI and MAELU. The Alliance of American Insurers and the National Association of Independent Insurers also wish to join in this statement.

We appreciate your invitation to present our views on nuclear power, with special focus on financial protection requirements and insurance. We believe that there is a special risk associated with the use of nuclear power. That has been mentioned extensively this morning. It is simply that there is the extremely remote possibility of a serious accident which could cause extensive offsite bodily injury and property damage. The possibility is very remote. It's impossible to forecast precisely what it might be in dollar terms.

This doesn't warrant the conclusion that we should abandon nuclear power as a component of a national energy program, but it does imply rather that the development of nuclear power will always require special treatment. Whether the task is delegated to private sources or carried out by the Government, we believe that the program must have the strong support of Government to protect both the public and private industry from this special risk.

This support must include strong safety regulation, reasonable financial protection standards, and a reasonable limitation on private liabilities. Insurers do not believe that we can entrust the safe development of nuclear power to a laisse faire energy market. But on the other hand, once the Government undertakes the course of close and detailed regulation, Government then becomes a partner in the outcome. It must be prepared at some point to assume some financial stake, or to provide some financial support.

As insurers, we would be concerned about the adverse effect on morale and safety that may result from a policy which seeks to deal with the special risk of nuclear power by imposing accumulation of heavier financial burdens on the nuclear power industry.

In our view, the assumption that unlimited liability will make nuclear powerplants safer or will provide the public more financial protection is not sound. There is no other industry where 94 members are required to provide compensation for an accident at the 95th. There is no other industry where this 95th member is required to assume exclusive and virtually absolute liability for damages arising in connection with its plant.

This is certainly not the result that would obtain under ordinary rules of law, or under free market principles. And yet, the public is assured a reasonable financial protection in this and other cases where it clearly might find far less compensation, or no compensation at all, precisely because of the Price-Anderson Act and the fundamental soundness of its balancing principle.

One can argue about the point where the balance ought to be struck, but the concept of a reasonable balance is sound and consistent with common sense and good economic theory.

And if you would care, Mr. Chairman, we would be pleased to submit a professional economist's report that goes into this in quite some detail.

The CHAIRMAN. It would be helpful if you could submit it for us. We will place it in the subcommittee files.

Mr. SCHMALZ. As insurers, we have a significant but secondary interest in whether there should be a limitation on liability and, if so, what the level of financial protection would be. The answers have a much more direct effect on the nuclear power industry, and we would therefore look to the nuclear power industry to undertake the major discussion of proposals to raise the limitation of the liability, or to remove it entirely.

But having said that, we do wish to call the attention of the committee to certain related factors that have a direct bearing on the amount of supporting insurance that may reasonably be expected from private insurers with respect to both nuclear risks arising from powerplants, and to the conventional risks located in their vicinity.

The role of the pools in providing property insurance to the nuclear powerplant operators is well known. Pools now make $585 million of this protection to nuclear powerplants in addition to the $160 million third-party liability coverage. At the same time, however, the members of the pools and private insurers and reinsurers around the world supply conventional insurance freely to other risks located in the vicinity of nuclear powerplants.

What is not so well known or understood is that private markets can do so without fear of adverse selection or of cumulating excessive potential liabilities only because the Price-Anderson system channels all liabilities to the operator and places an absolute ceiling on such liability at a reasonable amount, and pledges supplementary Government financial assistance in the remotely possible case that the privately furnished financial protection proves to be insufficient.

The pools must, accordingly, advise this committee that in their judgment a reasonable absolute limitation on liability is essential to maintaining maximum availability and affordability of private insurance.

There are several proposals for renewal of the Price-Anderson program with changes. They all appear to agree that its positive elements should be retained. That is, those features which enlarge the liability of the nuclear industry and increase the chances of obtaining compensation payments.

The proposals split into two camps when it comes to the matter of offsetting balances. S. 445, for example, would destroy the balance by repealing the limitation on liability entirely, and the Nuclear Regulatory Commission has been considering removal of the absolute limitation on liability and substituting an annual cap on the retrospective premium charges. There was considerable discussion about that this morning.

The pools cannot support bills and proposals of this sort because they will reduce the amount of insurance that is available from private insurers, not only for nuclear powerplants but also for many other persons and firms who live or operate businesses in the immediate vicinity of nuclear powerplants.

There are two bills, however, which do recognize that balance is necessary, although they would adjust the balance point. Mr. Price's bill, H.R. 51, would double the amount of the retrospective premium payments from the nuclear reactor operators. The immediate effect would be to raise the total pool of private funds to approximately $1.1 billion. We would favor this approach. It is simple and effective.

S. 1225, recently introduced by the chairman and Mr. Simpson, is more complex. It would require at least doubling, and would permit up to tripling the retrospective premium payments from reactor operators. It would then create a third tier of private financial protection in the amount of $500 million to be funded by a kilowatt hour fee on electricity generated and sold by civilian nuclear power reactors.

The three-tiered approach, as we understand it, would not damage the channeling and absolute limitation on liability principles that are essential for private insurance backup. We do have some reservations, however, whether it is necessary or wise to complicate financial protection with a third tier funded by what is essentially a special sales tax. We recognize that certain precedents exist with respect to the Superfund for hazardous substances, but wonder where proliferation or special tax supported funds will take us, with each fund competing for some special consideration.

We note that Mr. Price's approach could be easily adjusted to produce financial protection at an equivalent amount simply by setting the retrospective premium at three times the present $5 million level, and by folding the S. 1225 retrospective premium at the lower end. We have noted this, Mr. Chairman, as a reservation, not what we consider to be anything that would interfere with the pools' insurance arrangements.

There are some other proposals in addition to removing the limitation on liability which could undercut the channeling concept. Care must be taken not to water down the concept of an extraordinary nuclear occurrence so that it becomes meaningless. Otherwise, there would be strict liability for unbearable departures from regulatory limits or releases of very small quantities of nuclear material.

The pools would lose some capacity if the period within which claims may be brought against the last policy—that is, if a policy is cancelled—beyond the present 20-year period for discovery. As far as the pools are concerned, they have no objection to proposals which allow claimants a longer period of time than some State laws permit, as long as the principle of a reasonable limitation within which to present claims against the financial protection which is now 20 years is not altered.

Mr. Chairman, I am going to skip to the bottom of the very last page of the statement and indicate that, although the structure of Price-Anderson has a major effect on private insurance capacity for nuclear risks, downturns in the financial fortunes of private insurance markets in the United States and abroad can also have a substantial impact.

Insurance markets are currently recovering from an unusually long period of heavy operating losses. The pools had set the next target for nuclear energy liability insurance capacity at $200 million. They had hoped to reach this goal for 1986. They now believe that they must postpone solicitation of increased capacity until the recovery becomes more firmly established.

In summary, Mr. Chairman, we believe that if Congress wishes to continue to encourage the development of nuclear power, while taking all reasonable steps to protect the public, the existing Price-Anderson program affords a sound base. We think that the emphasis should now be placed on providing for measured increases in the amount of financial protection that can reasonably be achieved by insurers and the nuclear power industry, confident that a sound, ongoing program is in place for the future. We would continue to support such a program, and would make regular efforts to increase our capacity for nuclear insurance.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Schmalz follows:]

STATEMENT OF
AMERICAN NUCLEAR INSURERS
MUTUAL ATOMIC ENERGY LIABILITY UNDERWRITERS

BEFORE

THE SUBCOMMITTEE ON ENERGY AND DEVELOPMENT
OF THE
SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

June 25, 1985

I am Richard Schmalz, Counsel to American Nuclear Insurers and Mutual Atomic Energy Liability Underwriters, the two Nuclear Pools known as ANI and MAELU. I have been associated with the property and liability insurance business since 1946, and with the industry's nuclear insurance program since 1958.

We appear today on behalf of the Nuclear Pools. The total membership of these organizations includes over 200 insurance companies, with most of the major companies represented. We appreciate your invitation to present our views on nuclear power, with special focus on financial protection requirements and insurance.

We will not dwell on the advantages of nuclear power. The Pools are not advocates. But in the main, there seems to be only one serious special risk that must be faced -- there is an exceedingly remote possibility of an accident which could conceivably cause substantial off-site bodily injuries and property damage. It is impossible to predict the extent of such injuries or damage or what it might cost to compensate them under our ordinary tort liability system. The tort system itself was not designed to cover a catastrophe of such magnitude, and it is not well-suited for such a purpose.

The special risk associated with the use of atomic energy does not warrant the conclusion that we should abandon nuclear power as a component of our national energy program. It implies, rather, that development of nuclear power will always require special treatment, whether the task is delegated to private sources or carried out by government.

We believe that certain key elements are vital to a healthy private nuclear power program -- a program that can be carried out safely, that is insurable by private insurers, and that will attract the most insurance capacity from world markets at reasonable cost.

First, there must be a consensus that we, as a nation, want to develop nuclear power by private means. This is an important morale factor -- intangible, hard to quantify, but nevertheless real.

Second, the program must have the strong support of government to protect both the public and private industry from the special risk of nuclear power. This support must include strong safety regulation, reasonable financial protection standards and a reasonable limitation on private liabilities.

The implications are clear. We cannot entrust the safe development of nuclear power to a laissez-faire energy market. But on the other hand, once the government undertakes the course of close and detailed regulation, government then becomes a partner in the outcome. It must be prepared at some point to assume some financial stake or to provide some financial support.

Our feeling recently has been that we as a nation might be slipping away from the consensus, although we are not certain that this is the case, and that there are doubts in some quarters that such strong government support is actually desirable. As insurers, we are concerned about the adverse effect on morale and safety that may result from a policy which seeks to deal with the special risk of nuclear power by imposing a cumulation of heavier financial burdens on the nuclear power industry.

In our view the assumption that unlimited liability will make nuclear power plants safer or will provide the public more financial protection is not sound. And it seems unrealistic to require special measures, licensing requirements and financial protection standards that impose substantial non-market costs without balancing these costs with some compensating relief. There is no other industry where 94 members are required to provide compensation for an accident at the 95th. There is no other industry where this 95th member is required to assume exclusive and virtually absolute liability for damages arising in connection with its plant. This is certainly not the result that would obtain under ordinary rules of law or under free market principles.

And yet the public is assured of reasonable financial protection in this and in other cases where it clearly might find far less compensation -- or no compensation at all -- precisely because of the Price-Anderson Act and the fundamental soundness of its balancing principle. Price-Anderson recognizes the special risk of nuclear power, imposes special obligations on the nuclear industry to protect the public and limits liability to a reasonable amount, with the expectation that government will undertake special relief measures in the extremely unlikely event that they become necessary. One can argue about where the balance point ought to be, but the concept of reasonable balance is sound, and consistent with common sense and good economic theory.

The Pools recognize, however, that the rationale underlying this conclusion deserves more extensive consideration than it is possible to give in a brief, general statement. They commissioned a study on The Economic Foundations of Limited Liability for Nuclear Reactor Accidents, by Louis A. Cox, Jr. and Irving Plotkin of Arthur D. Little. Inc. The study includes a full and rigorous discussion of this matter from the standpoint of the professional economist. We will be happy to make this study available to this Committee.

As insurers, the Pools have a significant, but secondary interest in whether there should be a limitation on liability and if so, what the level of financial protection should be. The answers have a much more direct effect on the nuclear power industry. At present the Pools provide the first $160 million of financial protection while reactor operators provide the next $475 million. We would therefore look to the nuclear power industry to undertake the major discussion of proposals to raise the limitation on liability or to remove it entirely.

Having said that, however, we do wish to call the attention of the Committee to certain related factors that have a direct bearing on the amount of supporting insurance that may reasonably be expected from private insurers with respect to nuclear risks associated with nuclear power plants and to conventional risks located in their vicinity.

The role of the Pools in providing property insurance to the nuclear power plant operators is well known. By drawing on professional reinsurers throughout the world the Pools now make $585 million of this protection available to nuclear power plants. At the same time the members of the Pools, and private insurers and reinsurers around the world, supply conventional insurance freely to other risks located in the vicinity of nuclear power plants. What is not so well known or understood is that private markets can do so without fear of adverse selection or of cumulating excessive potential liabilities only because the Price-Anderson system channels all liability to the operator, places an absolute ceiling on such liability at a reasonable amount and pledges supplementary government financial assistance in the remotely possible case that the privately furnished financial protection proves to be insufficient.

The Pools must accordingly advise this Committee that in their judgment a reasonable absolute limitation on liability is essential to maintaining maximum availability and affordability of private insurance for both nuclear power plants and conventional risks located in their vicinity. Their view is strongly held by their sources of reinsurance, which now provide over one half of their total capacity. This matter is not new, but it takes on added significance as we witness world insurance markets retreating before an apparently uncontrollable expansion in the costs of compensating catastrophes using conventional approaches.

Channelling and limiting liability for nuclear risks, with supplemental government support, have been adopted by most, if not all of the free economies around the world that are developing nuclear power. They do away with the enormous legal complexities and associated costs when there are dozens of potentially liable participants. We know of no experts within the membership of our Pools, their foreign or domestic reinsurers, or within the insurance industry generally, who would view favorably proposals to remove the limitation on liability or to undercut the channelling of coverage concept. The suggestion that this may stimulate more insurance capacity from private markets is without substance. We have no doubt that the result would be at best a substantial drop in insurance capacity, and more likely a collapse of private insurance arrangements.

There are several proposals for renewal of the Price-Anderson program, with changes. They all appear to agree that its "positive" elements should be retained (that is, those features which enlarge the liability of the nuclear industry and increase the chances of obtaining compensation payments). The proposals split into two camps when it comes to the matter of off-setting balances.

Mr. Seiberling's bill (H.R. 445) and Mr. Hart's bill (S. 445) would destroy the balance by repealing the limitation on liability entirely. The Nuclear Regulatory Commission has been considering removal of the absolute limitation on liability, and substituting an annual cap on the retrospective premium charges that may be collected from each nuclear power plant operator in the event of a serious accident. This too would destroy the economic balance. The proposals also pose some serious constitutional and technical problems that unless resolved in a clear, unambiguous manner, would undercut the validity of the channelling principle. This is the principle that makes it possible to handle claims efficiently and to obtain widespread support for liability and property insurance in the face of the special risk of nuclear power.

The Pools cannot support bills and proposals of this sort because they will reduce the amount of insurance that is available from private insurers, not only for nuclear power plants but also for many other persons and firms who live or operate businesses in the immediate vicinity of nuclear power plants.

There are two bills, however, which do recognize that balance is necessary, although they would adjust the balance point. Mr. Price's bill (H.R. 51) would double the amount of the retrospective premium payments from the nuclear reactor operators. The immediate effect would be to raise the total pool of private funds to approximately $ 1.1 billion. We would favor this approach. It is simple and effective.

S.1225, recently introduced by Mr. Simpson, is more complex. It would require at least doubling, and would permit up to tripling, the retrospective premium payments from reactor operators. It would then create a "third tier" of private financial protection in the amount of $500 million to be funded by a kilowatt hour fee on electricity generated and sold by civilian nuclear power reactors.

The three tiered approach, as we understand it, would not damage the channelling and absolute limitation on liability principles that are essential for private insurance back-up. We do have some reservations, however, as to whether it is necessary or wise to complicate financial protection with a third tier funded by what is essentially a special sales tax. We recognize that certain precedents exist with respect to "Superfunds" for hazardous substances, but wonder where a proliferation of special tax supported funds will take us, with each fund "competing" for some special consideration. The hope of retaining a sound, general purpose compensation system seems doubtful.

We note that Mr. Price's approach could easily be adjusted to produce equivalent financial protection by setting the retrospective premium at at three times the present $5 million level and holding the S. 1225 retrospective premium at the lower end of its permitted level. For example, assuming 115 operating reactors (using the number Mr. Simpson suggests as reasonable) and $200 million for the first layer of financial protection (to be provided by the Nuclear Pools), the two proposals would each produce about $1.9 billion of financial protection.

Apart from proposals removing the limitation on liability or which would undercut the channelling of liability concept, there are a number of other proposals which, if adopted, would have a significant adverse effect on the amount of private insurance capacity.

Care must be taken not to remove the "extraordinary nuclear occurrence" concept, or to water it down to the point where it becomes meaningless. Otherwise, strict liability would be imposed for unverifiable departures from regulatory limits or releases of small quantities of nuclear material. Radiation injuries, if any, from such low level exposures would be indistinguishable from those occurring naturally or from causes having nothing to do with nuclear power plant operation. Extending strict liability to such cases may be taken as the intent of Congress to depart from the concept that the Price- Anderson Act is a remedy for "catastrophes", and to provide instead for the compensation of any injury to persons working on site or living in the vicinity of a nuclear plant that might be remotely linked to the normal radiation associated with nuclear plant operation.

The Pools will lose capacity if there is a further extension of the 20 year period for discovering and bringing claims after the termination of a Pool insurance policy, or if the cost of handling claims is not included within the policy limits. We should add that the insurance industry is now moving to a consensus that this latter principle should be adopted for all commercial liability policies.

We wish to call to the Committee's attention to a new matter. The Pools are beginning to see a sharp upturn in the number of claims against the financial protection from persons employed at reactor sites, mainly employees of independent contractors, alleging injury from low-level exposures to radiation. Normally, we would have expected that claims of this nature would be handled under workers' compensation laws. We do not believe that we have a safety problem or an increase in the risk of injury from low-level exposures to radiation. We think the uptrend is due to a general expansion in the tort remedies available to workers.

We do not have any proposal or request for specific action. Nor do we think that this matter affects the consideration of Price-Anderson renewal. We are, however, concerned that this trend may represent a gross departure from the original premise that the Price-Anderson system was not meant to afford a general remedy for occupational injuries or disease. We have no satisfactory way of building adequate reserves for this type of claim under our present Industry Credit Rating Plan.

We are watching our claims experience closely and are studying the size of the potential exposure with the help of outside experts. We intend to keep the Nuclear Regulatory Commission and the nuclear industry informed. If the trend continues, the matter may require regulatory or legislative attention. The matter does underscore at this time, however, the importance of retaining a sound definition of the "extraordinary nuclear occurrence" concept and implementing regulations.

There is finally one technical matter that we would like to raise. With the enormous increase in the costs of handling multi-claimant litigation under conventional tort procedures, the consolidation of suit provisions of the Price-Anderson system take on added value in reducing claims handling expenses. It was originally assumed that these provisions would apply to the Three Mile Island Accident even though the Nuclear Regulatory Commission ultimately held that the accident was not an "extraordinary nuclear occurrence" under the statutory definition and its implementing regulations. On the basis of this assumption the Pools were able to provide a consolidated defense in the Federal district court in Harrisburg through one law firm at a cost which represents a small fraction of the costs of handling even less complex litigation in other recent "mass tort" litigation.

The court, however, has now ruled that it had no jurisdiction. We would like to propose legislation that would authorize consolidation of suits in a single Federal district court if they arise out of a nuclear incident that is subject to the Price-Anderson Act, whether or not the incident is an "extraordinary nuclear occurrence."

Although the structure of Price-Anderson has a major effect on private insurance capacity for nuclear risks, downward turns in the financial fortunes of private insurance markets in the United States and abroad can also have a substantial impact. Insurance markets are currently recovering from an unusually long period of heavy operating losses. The Pools had set the next target for nuclear energy liability insurance capacity at $200 million. They had hoped to reach this goal for 1986. They now believe they must postpone solicitation of increased capacity until the recovery becomes more firmly established.

In summary, we believe that if Congress wishes to continue to encourage the development of nuclear power while taking all reasonable steps to protect the public, the existing Price-Anderson program affords a sound base.

We think that the emphasis should now be placed on providing for measured increases in the amount of financial protection that can reasonably be achieved by insurers and the nuclear power industry, confident that a sound ongoing program is in place for the future.

We will continue to support such a program and will make regular efforts to increase our capacity for nuclear insurance.

The CHAIRMAN. Thank you very much.
Ms. Kehoe.

STATEMENT OF KEIKI KEHOE, ENVIRONMENTAL POLICY INSTITUTE, ACCOMPANIED BY MICHAEL FADEN, UNION OF CONCERNED SCIENTISTS, AND KATHLEEN WELCH, U.S. PUBLIC INTEREST RESEARCH GROUP

Ms. KEHOE. Thank you, Mr. Chairman.

I am Keiki Kehoe with the Environmental Policy Institute. Accompanying me today are Kathleen Welch from the U.S. Public Interest Research Group, and Michael Faden from the Union of Concerned Scientists. I have prepared a brief summary of my statement, and I will attempt to summarize my summary in the interests of time this afternoon.

Our testimony examines six very fundamental issues for the Price-Anderson Act. I will not repeat those questions today, but they include such things as: What do you want to accomplish by the Price-Anderson Act? And how well do the proposals which we see on the table accomplish those goals?

In addition to that, our testimony covers eight additional issues, including the waivers of defenses that we have heard much discussion of this morning, and a wide range of issues ranging to costs of precautionary evacuations, State expenses for emergency responses, compensating latent injuries, and several others. I will not go into any detail on those issues today.

We believe that a Price-Anderson Act should accomplish two things: One is to reduce the likelihood of an accident ever occurring in the first place. We believe that the mechanism which would help reduce the likelihood would be strong safety incentives and a high standard of industry accountability.

A second and equal goal of any Price-Anderson effort should be to assure full compensation of all damages to anybody who is injured as a result of any nuclear accident. We do not believe that either the current act or the bill before the committee, S. 1225, accomplish either of those goals.

Although S. 1225 is the only bill referred to this committee, there are three other proposals which we think warrant your serious consideration, and I will very briefly summarize those.

The first is H.R. 2524, introduced by Representative Morrison from the State of Washington. I understand that your intent is very similar to his intent, and so we endorse that, but we saw his bill as going further in that it clearly identified the Federal treasury as the source of funds beyond the $5 billion amount of money that would come out of the Nuclear Waste Fund for a nuclear waste accident.

The second proposal which we would urge you to consider is S. 445, which is the Hart proposal which has been commented on by most panelists this morning. We believe that while the—let me explain for just a minute what it does. S. 445 removes the cap on liability, while retaining the compensatory or compulsory insurance requirements and the pooling requirements for the first layer of coverage. What S. 445 simply says is: If your insurance is not completely adequate, the public shall have a legal right to sue you or whoever it found to be responsible in a court of law.

We believe that if that bill were enacted, it would be a demonstration on the part of Congress that you are willing to treat the nuclear industry as a mature technology which is capable of withstanding the normal pressures of the marketplace, which most or all other hazardous industries withstand. We support this bill because we believe that it would hold the industry accountable for its actions.

The third proposal is the NRC proposal of 1983. I hesitate to call it the NRC proposal now, but one member of the House Interior Committee called it Palladino One. That proposal we believe is essentially retroactive insurance. What you do is, you require each powerplant owner to agree to pay for an accident at someone else's powerplant, and in exchange for that premium you charge, you assure that powerplant owner that if an accident happens at his plant, he will be covered. We think there is nothing different between what this does and what everyone of us does every day that we go out and buy insurance.

We also would like to point out that the NRC staff estimates that the impact of this proposal on the finances of the utility industry would be very minor, and somewhere in the range of 2 percent of the operating costs of a recently licensed nuclear plant. We think that this is probably a very reasonable insurance premium for the type of coverage that it gets.

Our final point on the NRC proposal is simple. We believe that if Congress continues to endorse the original premise of the Price-Anderson Act, which is that there should be protection for the public and there should be insulation of the industry from the potential of catastrophic lawsuits, then this is a logical development of that policy. Our organizations strongly oppose the concept that the nuclear industry should be insulated from financial accountability after an accident.

Finally, I will turn to the proposal on the table, which is S. 1225. To begin with, we support two features. One is that it provides parity coverage between DOE contractors and NRC licensees. We think that is fundamental, and we commend you for that. The second is that it identifies the source of funds for a nuclear waste accident as the "Nuclear Waste Fund." We agree with that wholeheartedly and commend you, as well.

Unfortunately, we do not support the bill because we do not feel that it achieves the goal which it sets out to achieve. That is, to assure equitable, reliable, comprehensive assured compensation in advance of an accident. As the goal is stated, it says "in advance of any accident." We don't believe that this accomplishes that for a simple reason.

That reason is, that you can't cap liability and assure compensation without identifying the source of additional funds and without creating a mechanism to get to those additional funds. We feel that this is the fundamental flaw of this proposal, and that what it does is it postpones what is the most difficult policy issue—it postpones a decision on the most difficult policy issue for Congress after the fact. We believe that it is essential to make this decision up front.

Much discussion today was focused on what happens if damages exceed the amount that is specified in your bill. We ask that same question. Where does the money come from? We see only two sources. The first is the industry; the second is the Treasury.

Now we've heard comments on all sides of this. Some people have said or suggested that the funds in excess of the limits could come from a tax on nuclear generator electricity, and we do not believe that that's a realistic alternative for two reasons: The first is political. As we saw after the accident at Three Mile Island, it is extremely difficult if not impossible for Congress to come in after an accident and assign liability or assign responsibility to the nuclear industry or anyone else. So politically we see this as a very, very difficult proposal.

The second problem is that even if you could overcome the political hurdle, we believe—or we would expect that the nuclear industry would challenge the legality of such a proposal after the fact, and that was discussed a little bit this morning in Mr. Asselstine's comments. Our reading of your bill is that it very specifically and clearly limits the aggregate liability of the licensees after a nuclear incident for public liability, and we believe that a proposal that would come in after an accident and turn to those funds, and tax those parties would be something which would be objected to on legal grounds.

Finally, that leaves only one source, which is the Treasury. I think that in a time of deficit such as we are facing right now, it is difficult to imagine where Congress is going to squeeze $1, $2, $5, $10 billion, or whatever it takes, out of the Federal Treasury. I think that that's a very difficult task.

The final problem with that is that I find it difficult to imagine Congress choosing to turn to Federal taxpayer funds to pay for an accident which is clearly manageable by this industry, where the burden can clearly be borne by this industry as proposed by the Nuclear Regulatory Commission in its recommendation in 1983.

I will skip to my very final comment, which is the issue of public acceptance. For more than 30 years the American people have been assured that the risks of nuclear power are acceptable. In recent months, the nuclear industry has assured us that, even if you had a worst-case accident, damages to the public would be relatively insignificant. I think the millions of Americans who live near nuclear plants along transportation routes, near DOE facilities, and potential high-level waste repositories, sincerely want to believe this.

I think with the renewal of the Price-Anderson Act, this Congress has the opportunity to demonstrate that the risks of nuclear power are in fact acceptable. But if the risk is too large for the industry to bear, we find that the public would have very good reason to conclude that nuclear risks are not in fact acceptable.

I will be happy to answer any questions.

[The prepared statement of Ms. Kehoe follows:]

ENVIRONMENTAL POLICY INSTITUTE

Testimony of
Keiki Kehoe,
Environmental Policy Institute
accompanied by
Michael Faden,
Union of Concerned Scientists
and
Kathleen Welch,
U.S. Public Interest Research Group

on behalf of
Environmental Action, Inc.
Environmental Policy Institute
Friends of the Earth
Nuclear Information and Resource Service
Sierra Club
Union of Concerned Scientists
U.S. Public Interest Research Group

before the

Energy Resources & Development Subcommittee
of the
Senate Committee on Energy & Natural Resources

June 25, 1985

Thank you for this opportunity to present our views on the renewal of the Price-Anderson Act, one of the most important energy issues before this Committee. As you know, the central question Congress will face is: who should be responsible for compensating the public after a nuclear accident? Our testimony today is divided into two parts.

Part I explores five fundamental questions:

1) What goals should Price-Anderson achieve?
2) Is the current Price-Anderson Act good public policy?
3) How important is industry accountability?
4) How well do the proposals before Congress achieve the dual goals of accountability and compensation?
5) What would the impact of these proposals be on the nuclear industry and the public?

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Part II addresses eight additional issues which are critical to a comprehensive reform of the Price-Anderson Act.

PART I: THE CENTRAL ISSUE OF LIABILITY

WHAT GOALS SHOULD PRICE-ANDERSON ACHIEVE?

As Congress considers a third renewal of the legislation intended to protect the public from the consequences of a nuclear accident, it is essential to begin with a thoughtful evaluation of the policy goals that should be achieved. We strongly believe that the public deserves a balanced and comprehensive federal policy which reduces the risk of a nuclear accident and assures full compensation for the public in the event of an accident.

Unlike past renewals, the issue this year is not extension of the Act to assure stability in the nuclear industry's planning process. If Congress simply allowed the Act to expire, every existing nuclear plant, including those under construction, would continue to be covered. Indeed, some will argue that Congress should let Price-Anderson expire, since no utilities have expressed an interest in ordering new reactors. We do not agree.

There are currently 94 nuclear plants covered under Price-Anderson, and about 25 more under construction. A catastrophic accident at any one of these facilities could cause tens of billions of dollars in damage to neighboring communities. The limit on liability for all NRC-licensed activities stands at $630 million. Department of Energy contractors at an estimated 280 facilities are engaged in activities involving risks to the public significant enough to require Price-Anderson indemnity agreements. [1] The liability of the federal government for damages caused by contractor activities is limited to $500 million. If Price-Anderson expires, DOE may not have the authority to enter into new indemnity agreements with its contractors.

One of the most significant differences between this Price-Anderson renewal and those of previous years is the issue of high-level radioactive waste. The DOE is considering sites in 23 states [2] for construction of a high-level nuclear waste repository. Several states being considered for the first repository have strongly objected to the $500 million limit on liability. DOE's insistence on limiting liability for damages to the public arising in the course of transportation, storage and disposal of high-level nuclear waste is threatening the success of the entire repository program.

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The hazards that the Price-Anderson Act was intended to protect against will not disappear with the expiration of the Act; the risk of an accident with catastrophic consequences will continue for decades to come. Although the probability and consequences of a catastrophic nuclear accident continue to be the subject of considerable uncertainty, recent NRC estimates indicate that we may be facing a 50-50 chance of experiencing a nuclear meltdown within the next 20 years. If such an event resulted in an off-site release of radiation, NRC documents suggest that a "mean" accident at the Indian Point reactor would cause roughly $10 billion in damages.[3]

A balanced and comprehensive public policy would do the following:

- prepare for a "worst case" accident before it happens, rather than holding victims of a several billion dollar accident hostage to the political vagaries of a future Congress;

- assure that a mechanism is in place to provide full and complete compensation for all public damages;

- assure complete parity for all nuclear accident victims, rather than establishing a double standard which discriminates between victims of a commercial nuclear accident and those harmed by federal nuclear activities;

- not allow companies that are negligent to be "held harmless" for damage they inflict on the public;

- not provide a "blank check" at taxpayers' expense to cover damages beyond an arbitrary limit;

- stimulate increased coverage and involvement in managing nuclear risks by commercial insurers, and seek private-sector solutions to the greatest extent possible.

In short, a balanced nuclear accident policy would achieve two goals. It would reduce the likelihood of an accident by establishing strong incentives for safety and high standards of industry accountability. And it would establish a system which assures full compensation for all damages to the public if an accident happens. As the next section will explain, the current Price-Anderson system fails to accomplish either of these goals.

IS THE CURRENT PRICE-ANDERSON ACT GOOD PUBLIC POLICY?

The original intent of the Price-Anderson Act was to balance the promotion of the fledgling nuclear industry with the need to protect the public in the event of a nuclear accident. The system as it has evolved over the past three decades is routinely referred to as a "delicate balance" by advocates for the nuclear industry. A close examination of this "balance" reveals a program which grants all of the benefits to the nuclear industry and shifts all of the risks and uncertainties to the public. This conclusion is reached by comparing the financial protection of a utility after an accident with the protection provided for members of the public.

In the event of a serious nuclear accident, the owner/operator of a nuclear plant faces the following certainties:

- more than $1 billion in insurance to pay for on-site clean-up and possibly restoration of the power plant;
- insurance to pay for replacement power while the plant is out of service;
- the right to sue the manufacturer, component supplier or architect-engineer for all losses if fault can be established;
- a system of state regulation that has never allowed a utility to become insolvent since the Depression.

In contrast to the protection available to the utility, the public would face the following uncertainties:

- no insurance to cover their homes, businesses or other property;
- no legal right to recover from a manufacturer, architect-engineer or any other party who may have caused the accident -- regardless of negligence or fault;
- a pro-rated share of a $630 million compensation fund -- which at best is likely to compensate only a small fraction of actual losses;
- a vague promise that Congress will consider some action which may or may not prevent large numbers of businesses and individuals from facing bankruptcy.

It is difficult to imagine anyone seriously considering such a system "balanced". The very foundation of our economic system is the principle that excellence is rewarded; yet Price-Anderson tells the nuclear industry: "no matter how negligent, careless or reckless you are, you are not responsible for fully compensating damages you cause the public." The public, on the other hand, is sent the opposite message: "no matter what precautions you take to protect your home, business or other property, it could be destroyed by someone else's carelessness and you have no legal right to full compensation." This is not sound public policy.

HOW IMPORTANT IS ACCOUNTABILITY?

Our organizations strongly believe that the limit on liability, and the "hold harmless" clause which insulates manufacturers, designers and all other participants in the nuclear industry from public liability, removes an important incentive for nuclear safety. We are not alone in drawing this conclusion. A full decade ago former AEC Commissioner William Kriegsman flatly stated: "Do away with it [the limit on liability] and you'd probably see nuclear valves coming off the assembly line in better shape."[4] In 1983 the Heritage Foundation called for elimination of the limit on liability and a greater reliance on free market mechanisms, such as private insurance, for assuring the safety of nuclear plants. Similarly, the National Taxpayers' Union testified before the House Interior Committee last year, arguing that the nuclear industry would be safer if subject to the traditional tests of the marketplace.

The nuclear industry stridently dismisses the possibility that there is any relationship between their performance and the limits on their liability. Industry representatives argue that one need only look at the finances of General Public Utilities after the relatively "minor" accident at Three Mile Island to realize how high the stakes already are. This is a reassuring argument for those who are not familiar with the day-to-day mishaps that plague this industry.

Just how well have the "lessons of TMI" been incorporated into the operating practices of this industry? The recent events at the Davis-Besse plant in Ohio are an all too vivid reminder that not all utilities have fully incorporated the lessons of TMI into their operating practices. Attached is a memo prepared by the staff of the House Subcommittee on Energy Conservation and Power of the Committee on Energy and Commerce oulining the series of oversights by both the NRC and the utility which led to the incident.

The myriad of problems facing this industry have not escaped the attention of even its strongest advocates. To quote Energy Secretary Herrington at a recent nuclear industry forum:

"There is no excuse for bad planning, for mismanagement, for shoddy construction. ...How many more times do we have to read stories like we read two weeks ago that 12 out of 17 licensed operators at one utility failed the NRC requalification exam, before the industry takes strong, dramatic steps at corrective action?"[5]

The public is asking the same question. How many more times do we have to read about utilities falsifying reports, operators failing and/or cheating on their exams, power plants built backwards or on foundations that sink, harrassment of inspectors, improper welds, and the myriad of "operator errors" that have become so commonplace?

The list of mishaps and near misses for this industry is not a short one. If isolated, many of the events cited in NRC reports may not be all that significant; the cumulative affect of these many "small" mistakes could be significant. As we saw at TMI, a series of failures in operator performance can play as critical a role in a nuclear accident as the failure of pumps and valves.

In February 1983 the Salem reactor failed to scram twice within three days, the most serious event since TMI. After the first failure, the utility (Public Service Gas & Electric) tried to put the plant back on line, before discovering what had actually failed. The cause of the failure was inadequately lubricated reactor trip breakers. The breakers were not lubricated at all from 1974 to 1982 and were cleaned with the wrong solvent in early 1983. Westinghouse recommends lubrication every six months, however, reports indicate that Westinghouse never sent the manual on proper maintenance to PSG&E. As one NRC Commissioner described the incident: "At best, the failure reflects an intolerable degree of carelessness...."[6]

While it may be impossible to link this "inattention to detail" to the limit on liability, it would not be prudent to dismiss totally the potential impact of full liability on the nuclear utilities' and vendors' performance. While the primary responsibility for regulating nuclear safety rests with the NRC, few federal regulations can be as compelling as full financial liability when it comes to day-to-day management decisions. Attached is a letter from a member of the NRC's technical staff urging Congress to substantially increase liability for accidents as a means for improving nuclear safety.

Furthermore, the potential role of the insurance industry in reducing nuclear risks is too often overlooked. Insurers have long played an important risk management role in our society, a role which other hazardous industries have benefited from. By providing financial incentives for good performance, rather than punitive fines for carelessness, the insurance industry could have a very constructive impact on nuclear safety. Unfortunately, it is very unlikely that insurers will be willing to play an active role in risk management unless they have more of their assets at stake. Today, the amount of liability insurance they offer for the entire nuclear industry is less than they wrote for Michael Jackson's "Victory Tour" concert series last summer.[7]

Finally, insulation from public liability resulting from gross negligence and willful misconduct is unheard of for any other industry. Even the drafters of the original "Price-Anderson" legislation included the clause: "the Government shall have no obligation under the indemnity agreement for loss or damages caused by bad faith, willful misconduct or gross negligence..."[8]

If Congress' goal is to reduce the possibility of a nuclear accident, strong incentives for nuclear safety must be increased. The nuclear industry must be held accountable, not harmless for public damages caused by reckless behavior, carelessness and negligence.

HOW WELL DO THE PROPOSALS BEFORE CONGRESS ACHIEVE THE DUAL GOALS OF ACCOUNTABILITY AND COMPENSATION?

Although only one Price-Anderson bill, S. 1225, has been referred to this Committee, there are three additional proposals which warrant this Committee's serious consideration.[9] The following is a brief description of the prinicple features of each:

S. 445 introduced by Senator Gary Hart (and its counterpart in the House, H.R. 445, introduced by Rep. John Seiberling, D-OH)) is endorsed by our organizations. S. 445 retains the existing compensation pool but removes the limit on liability for commercial power plant accidents. This bill establishes a floor rather than a ceiling for public compensation. Without an arbitrary limit on liability, the nuclear industry would be responsible for determining how much public liability insurance is prudent to carry.

If sufficient coverage is not available through the existing insurance pools, the utilities would utilize self-insurance mechanisms to cover their liability, much like they have for on-site property damage. Given a strong incentive to increase on-site property insurance after TMI, the utilities convinced the insurance pools to nearly double the amount of coverage they were willing to write. In addition, the utilities established a self-insurance program which brought the total coverage for on-site losses to over $1 billion.

Under S. 445, the level of liability coverage ultimately attained by the utilities is certain to be far greater than the $630 million currently required under Price-Anderson. More importantly, that amount would not be the limit on public compensation. The public would be allowed the same legal right to recovery that the utilities currently have --- namely the right to sue a manufacturer, component supplier, or any other party who is responsible for the accident. S. 445 significantly increases the public's chances for full compensation and incorporates strong safety incentives and accountability mechanisms.

H.R. 2524 introduced by Representative Sid Morrison (R-WA) has not been introduced in the Senate, but should be considered as an alternative for legislation in this Committee. S. 2524 removes the limit on liability for accidents involving the transportation, storage and disposal of nuclear waste under the Nuclear Waste Policy Act of 1982. Under H.R. 2524 up to $5 billion in damages would be paid out of the Nuclear Waste Fund (established under the Nuclear Waste Policy Act). If damages to the public exceed $5 billion, H.R. 2524 identifies the Federal Treasury as the source for additional compensation.

Our organizations support H.R. 2524 because it does not contain an arbitrary cap on public compensation. We believe this bill would more appropriately achieve its goal of assuring full public compensation if it did not cap the amount of funds to be paid out of the Nuclear Waste Fund. When the Nuclear Waste Policy Act was enacted, the Nuclear Waste Fund was intended to cover all of the costs of the nuclear waste program; bearing the costs of public liability for accidents involving commercially generated high-level waste is an appropriate responsibility of this fund. The DOE currently plans to co-mingle commercial and military nuclear waste, and therefore will require federal contributions into the Nuclear Waste Fund. If this bill were amended to require that all damages be paid out of the Nuclear Waste Fund, taxpayers would bear an appropriate share of the burden and persons injured by an accident which causes more than $5 billion would not be dependent upon the Congressional appropriations process.

The NRC Proposal which was sent to Congress in late 1983 (NUREG-0957), has not been introduced as legislation but continues to be a focus of Congressional attention. (From an historical perspective it is important to point out that the last time a major revision in the Price-Anderson Act was adopted -- the utility assessment layer -- it was based on a proposal from the AEC staff.) The proposal, endorsed unanimously in 1983 by the five NRC Commissioners, substitutes an annual limit on liability for the current absolute limit.

In recent weeks it has become clear that this proposal is no longer unanimously endorsed by the NRC Commissioners. Although four of the five current Commissioners voted in favor of this proposal in 1983, a majority of the Commissioners may be testifying before you today in support of a cap on liability, such as that proposed in S. 1225. If the Commission has, in fact, reversed itself, it is important for the record to show that this "change of heart" came only recently as a direct result of pressure from the nuclear industry. According to testimony given by Commissioner Asselstine at a hearing in the House Interior Committee earlier this month, the NRC's reconsideration of its recommendation began when representatives of a large nuclear utility visited each Commissioner and indicated that the industry would oppose extension of the Price-Anderson Act unless the Commission abandoned its 1983 recommendation. [10]

Although this proposal is often referred to as "unlimited liability," it does not expose any participant in the industry to unlimited liability in the traditional sense. The NRC proposal would assess each utility $10 million per licensed reactor on an annual basis until enough money is collected to settle all public damage claims. All liability continues to be "channeled" to the power plant owners; thus no manufacturer or other non-utility participant in the industry would be liable for any public damages. Each utility would be assured that no assessment would exceed $10 million per plant in any single year. The utility experiencing the accident would not be exposed to any greater liability than any other utility. This proposal establishes a mechanism to assure compensation of all claims which is superior to any other plan on the table.

Effectively, the NRC proposal is little more than a retroactive insurance scheme. The owner of each nuclear plant is required to pay an annual "premium" to cover an accident at another plant, in exchange for the assurance that liability for an accident at his own plant would be covered; this is precisely what each one of us does when we purchase insurance. The problem with this proposal is that unlike standard insurance, the cost of an accident is spread equally among all participants. There is no "deductible" provision which would require the utility experiencing the accident to bear a larger burden of the liability costs, nor is there any mechanism for adjusting the premiums charged to reflect the specific risk characteristics for each plant. Finally, there is no "subrogation" clause which is the standard feature in private insurance that allows the insurer to recover his expenses from another party if someone else caused the accident through negligence.

While this proposal falls short of the goal of industry accountability, by making each utility its "brother's keeper" this system may increase internal pressures within the industry to improve overall safety practices.

If Congress endorses the original premise of Price-Anderson, that of assuring protection of the public and insulating the industry from the potential of bankrupting liability after an accident, this proposal is the logical development of that policy. Our organizations do not support the premise that those who cause a nuclear accident should be insulated from financial accountability.

S. 1225, introduced by Senators Simpson and McClure is the only Price-Anderson legislation that has been referred to this Committee, and therefore the primary focus of this hearing. S. 1225 increases the compensation fund to somewhere between $1.6 billion and $2.4 billion.[11] This is accomplished by raising the post-accident assessments from $5 million to $10 to $15 million (subject to the discretion of the NRC) and authorizing a 1 mill per kilowatt hour fee on nuclear-generated electricity up to a maximum of $500 million. (The first layer of coverage continues to be a requirement to purchase the maximum amount of liability insusance, which is currently $160 million.) If damages exceed the amount provided by the three layers of coverage, the President is required to submit a plan to Congress for providing additional compensation, and Congress is required to act on the President's plan in an expedited manner.

We strongly support two features of this bill. First is the principle of parity between accidents caused by federal nuclear activities and those caused by commercial accidents. We strongly agree that this is an essential feature of any comprehensive Price-Anderson reform. Second, we support the requirement that compensation for an accident resulting from the high-level nuclear waste program should come out of the Nuclear Waste Fund. (see comments on H.R. 2524 above)

We welcome the introduction of legislation which addresses the three major areas of Price-Anderson coverage: commercial plants, federal contractors and high-level nuclear waste. However, we do not consider this bill to be truly comprehensive, since it does not address the many issues which are of particular concern to the public and affected states; Part II of this statement briefly discusses those issues. We also have a number of technical questions regarding specific features of this bill, attached is a list of those concerns.

Even if all of these issues were resolved, our organizations would not be able to support this bill unless the fundamental structure of the bill were amended to assure that the public would be compensated for all damages caused by any nuclear accident.

The stated purpose of S. 1225 is to establish "an equitable, efficient, reliable and comprehensive system, in advance of any accident involving nuclear materials, which provides a mechanism for full compensation of the public in the event of such an accident...." Our organizations strongly support that goal. Unfortunately, S. 1225 fails to achieve its stated purpose.

The goal of assuring full compensation for any accident is inconsistent with capping industry liability, unless the source of additional funds is clearly identified and a mechanism for assuring the availability of those funds is created.

The central flaw in this proposal is that it allows Congress to dodge the most difficult question: where will compensation beyond the limit come from? The concept of allowing Congress the flexibility to "tailor" a response depending upon the specific details of an accident may be appealing, but it is unrealistic. Supporters of S. 1225 have been very vague about the source of additional funds--suggesting that Congress may want to impose an additional tax on nuclear generated electricity, seek funds from other pariticipants in the industry, or even take action against the specific utility or other party--if warranted. [12]

As Congress, and this Committee in particular, witnessed after the accident at Three Mile Island, assigning responsibility to pay for a nuclear accident after-the-fact is an exceedingly difficult task. Even if Congress overcame the political hurdle of approving a tax on nuclear energy or required some other participant in the industry to pay, the industry would probably challenge such a measure on legal grounds. S.1225 explicitly "holds harmless" those who are indemnified for public liability beyond the amounts required under the Act. (See question #11 in the attached memo)

Realistically, the only other source of funds for compensating damages beyond the limit is the Federal Treasury. The Chairman of this Subcommittee is certainly aware of the difficulties that would be encountered if there was a need to squeeze a few billion dollars out of the budget for the purpose of compensating the public. As we saw in the aftermath of the Texas City Disaster, Congressional relief efforts are not always prompt or complete.

The goal of creating an equitable and reliable compensation program is similarly jeopardized by the "after-the-fact" feature of this proposal. Establishing a compensation scheme which is considered "equitable" requires an agreement on the fundamental issue of whose pocket the compensation should come from. As was noted above, there are really only two sources of additional funds. One is the industry, the other is the Federal Treasury. As you are well aware, there will be loud protests if either of these sources is proposed. By postponing resolution of this issue, any compensation plan that is proposed will be considered inequitable by some; if a compensation plan is perceived as "unfair" by a majority of Congress, it may well be rejected--possibily leaving those who are injured uncompensated. The expedited Congressional procedure mandated in S.1225 can require Congress to vote on a compensation plan, but it cannot guarantee that a plan providing full compensation will be approved.

If the goal of this legislation is to create an efficient, equitable and reliable mechanism for compensating all damages for any accident, it is absolutely essential that Congress make the difficult decision about who will pay--before an accident happens. The Price-Anderson Act is an uncessarily complex law, full of out-dated features and dependent upon a series of arbitrary tests and thresholds. Efforts to reform Price-Anderson should concentrate on establishing a simple, fair and predictable system for holding the industry accountable and compensating the public after an accident; this bill goes in the opposite direction.

WHAT IMPACT WOULD THESE PROPOSALS HAVE ON THE INDUSTRY AND THE PUBLIC?

Whenever Congress considers significant changes in Price-Anderson, a fundamental question is: what effect will this have on the nuclear industry? Without the aid of a crystal ball capable of predicting the future, Congress invariably relies on the nuclear industry's warnings that full liability will destroy the nuclear option. Loud protests from the industry are understandable; no one wants to give up a special status, particularly when it is a status unlike anything ever granted another industry. A closer examination of the reasoning behind the protests, however, reveals a transparant logic.

If S. 445 were enacted, the industry claims that the "delicate balance" created in the Price-Anderson Act would collapse. According to their arguments, the "glue" which holds the system together is the channeling of liability to reactor owner/operators. While some utilities argue that they would be willing to operate nuclear plants without a limit on their liability, they point out that the hundreds of companies that provide parts and services to the nuclear industry would not be willing to continue to participate if subject to full liability. This argument, which has been used for years, is not supportable.

Despite the Price-Anderson restriction on the public's ability to sue a nuclear supplier for damages, utilities are allowed to file lawsuits which could bankrupt a manufacturer, supplier or architect-engineer. After the accident at TMI, General Public Utilities filed a $4 billion lawsuit against Babcock & Wilcox for expenses incurred by the utility. Despite its vulnerability to similar lawsuits in the future, B&W continues to be active in the nuclear industry. As we have seen more recently, a manufacturer or architect-engineer need not even cause an accident to be sued for billions of dollars. Houston Lighting & Power, along with several other owners of the South Texas Project, sued Brown and Root for more than $6.3 billion.

While the $750 million settlement reached a few weeks ago, was a "disappointment" to the plaintiffs, it was larger than the entire industrys' public liability for an accident.

Enactment of S. 445 would demonstrate that Congress is willing to treat nuclear power as a mature industry capable of withstanding the same laws of liability that every other hazardous industry operates under. As we mentioned earlier, full industry accountability is likely to make the nuclear industry safer -- and thus the possibility of an accident would be reduced. Furthermore, the public's perceptions of the risks of nuclear power would be significantly reduced. The contradiction between this industry's assurances about safety and the fact that it is unwilling to assume full responsibility for accidents, gives the public good reason to doubt the credibility and safety of this industry.

The extent to which full liability might increase the costs of nuclear-generated electricity is impossible to predict. William Lee, Chairman of Duke Power, told the House Interior Committee (at a hearing on June 4, 1985) that a severe accident at a nuclear plant would wipe-out the utility, even without liability for public damages. If that is the case, one would assume that the investment community has already taken this into consideration when financing costs are established. Assuming that the company owning the plant would face bankruptcy after an accident, it is difficult to understand how removal of the limit on liability would increase the riskiness of nuclear investments.

Without a limit on liability utilities would certainly obtain greater liability insurance, either through private sources or industry-wide pools. Compared to all of the costs associated with producing and distributing electricity, additional insurance premiums are not likely to be significant. Any increase in the costs of nuclear energy resulting from removal of the limit on liability will be a reflection of the size of the subsidy that Price-Anderson provides to the nuclear industry. In light of the fact that this subsidy has been provided for nearly 30 years, it is only reasonable to request that this industry internalize the full costs of nuclear technology in the future.

If Congress enacted S. 1225, the public would be given the illusion that full compensation would be provided and the industry would be given significant uncertainty about future financial obligations. Under S. 1225, the public would have not be assured that adequate funds would be available for full compensation of damages beyond the $2.4 billion cap; furthermore, the publilc would have no assurance that the company causing the accident would be held accountable for public damages.

Although the intent behind Price-Anderson is to provide the nuclear industry with certainty about its financial obligations after an accident, S. 1225 appears to increase the uncertainty. None of the participants in the industry would have any way of knowing whether they would be individually liable, jointly liable, or not liable at all. Because of this uncertainty, investors may require a "risk premium" for all nuclear investments if this proposal was enacted.

If Congress enacted the NRC plan, every utility would have the assurance that it's obligation for compensating the public after an accident would not exceed $10 million per reactor in any single year. All other participants in the nuclear industry, such as architect-engineers, manufacturers and component suppliers would be fully insulated from any public liability after an accident. Under the NRC plan, the public could be assured of the availability of adequate funds for full compensation of all losses, without relying on complicated litigation or Congressional action. (As the NRC pointed out in its' report to Congress, some mechanism for assuring prompt payment of claims would be necessary for large accidents.)

Owners of nuclear plants have objected to this plan, arguing that it would pose too large of a burden for the utility industry. As NRC Chairman Palladino testified before the House Interior Committee (June 4, 1985), this assessment would represent approximately 2% of the annual operating costs of recently licensed nuclear plants. In a more extensive study prepared by the NRC staff [13], it is very clear that an assessment even several times greater than $10 million per plant could be paid out of the internal cash flow of most nuclear utilities, without a significant financial strain.

In order to better understand how large of a burden this proposal would be on nuclear utilities, we calculated the impact of a $10 million per plant assessment for 48 investor-owned utilities with nuclear plants. The attached tables indicate what a $10 million per nuclear plant represents as a percentage of income available to pay common stock (assuming that state regulators prohibited pass-through to consumers) and as a percentage of income available through sales of electricity. As a reference point, the anticipated impact of nuclear plants under construction on utility rates is also included. These tables were calculated using 1983 financial data. For utilities with nuclear plants under construction, the estimated impact assumes that those plants are already licensed. (Once these plants are included in the company's ratebase, the actual impact on rates and earnings is likely to be even lower than indicated in the table.)

Finally, the nuclear industry objects to the NRC plan on the grounds that it is unfair. Is it fair to assess all utilitites for the actions of just one? No plan which spreads the costs equally, without any reference to responsibility or risk is entirely fair. The current system, which is labeled "fair" by many industry representatives, is likely to leave the public largely uncompensated. As the NRC staff pointed out: "The question of whether it is equitable can not be viewed in isolation. Rather, the question should be whether it is more or less equitable than having the burden fall on the taxpayers or the victims of an accident." [14] In our view, the most fair compensation plan would put those who have chosen to invest in nuclear technology at the top of the list. The least fair system would be one which forces the victims to bear the costs of an accident.

THE CHALLENGE:
CRAFTING LEGISLATION THAT ACHIEVES BOTH COMPENSATION AND ACCOUNTABILITY

Our organizations support S. 445, because it is the only proposal which accomplishes the fundamental goal of industry accountability, and because it greatly improves the publics' ability to be fairly compensated. If the Price-Anderson Act is going to be renewed, and we expect that it will, Congress will need to consider a comprehensive package of amendments which will cover the wide range of issues addressed in this testimony. S. 445 is not comprehensive legislation, nor was it intended to be. In fact, none of the proposals currently on the table are truly comprehensive.

Three of the proposals we have addressed this morning are constructive steps in the right direction. S. 445, because it assures accountability. H.R. 2524 because it clearly identifies the source of funds for unlimited compensation for nuclear waste accidents. And the NRC plan, because it suggests a mechanism for assuring full compensation for the public after a commercial nuclear accident. We urge you to take the strengths of each of these three proposals and meld them into a comprehensive policy which accomplishes the goals of full compensation and full accountability.

A comprehensive bill would:

- cover all nuclear hazards, including nuclear power plants, the transportation of nuclear materials, nuclear waste and DOE facilities;
- assure the availability of funds to fully compensate all valid claims, without relying on Congressional action if at all possible (the NRC concept of annual assessments, with a mechanism for avoiding delayed settlement of claims, would be an appropriate model);

- not allow anyone who is negligent or reckless to be "held harmless" for their actions.

We hope that this Committee will not be distracted by optimistic predictions about the consequences of a nuclear accident. If we could be confident that an accident would never exceed a $1 or $2 billion in damages to the public, no one would argue for the cap on liability proposed in S. 1225. The most difficult question for Congress is "who will pay?" for a more serious accident. If Congress wants to assure an equitable and reliable system for fully compensating all damages to the public after any nuclear accident, Congress must decide now--before the accident--where the compensation will come from. The millions of Americans living near nuclear power plants, along transporation routes, federal nuclear facilities, and future high-level waste sites have a very real stake in making sure that a national policy dealing with nuclear accident victims which assures full compensation is in place before an accident happens.

PART II: THE OTHER ISSUES

In addition to the fundamental question of the limit on liability addressed in Part I, there are several other issues which Congress needs to address in a comprehensive reform of Price-Anderson. The following is a brief discussion of each of these issues.

DOE ACTIVITIES: The Limit on Liability Becomes A Roadblock

As we mentioned in Part I, DOE is insisting that the $500 million limit on liability which applies to federal contractors should cover the high-level nuclear waste program. States that have been chosen as candidates for the first repository have strongly opposed any limit on federal liability for high-level waste activities. Ironically, the Price-Anderson Act---which was enacted in order to remove a "roadblock" 30 years ago---has become a roadblock itself, threatening the success of cooperation agreements between the DOE and state governments and ultimately the success of the repository program itself.

The Price-Anderson limit on liability was originally enacted in 1957 for the primary purpose of encouraging private investment in commercial nuclear energy. There is no legal or politically supportable reason to arbitrarily limit the federal government's liability for its contractors' accidents.

DOE and its contractors argue that Price-Anderson coverage is essential for the continuation of many government contractor activities, including much of the defense system. It is interesting to note, however, that before the passage of the Price-Anderson Act in 1957, the Atomic Energy Commission had very similar indemnity agreements with many of the very same contractors. There were two essential differences between the pre-1957 indemnity agreements and the current Price-Anderson Act. First, these agreements covered all public liability without any arbitrary monetary limit. Second, they made the contractor responsible for public liability if an accident was caused by "gross negligence, willful misconduct or bad faith."[15]

RECOMMENDATION: DOE should be responsible for fully compensating all damages to the public resulting from its nuclear contractor activities. DOE should be allowed to indemnify its contractors against the risk of public liability. If an accident is caused the contractor's negligence, DOE should be required to seek recovery of the amount of compensation through legal action against the contractor. Compensation for accidents involving the transportation, storage or disposal of high-level nuclear waste should be paid out of the Nuclear Waste Fund, established by the Nuclear Waste Policy Act of 1982.

THE WAIVERS OF DEFENSES: Relatively Meaningless

The extraordinary nuclear occurrence (ENO) threshold and the "benefits" which the public derives from the waivers of defenses is probably the most misunderstood feature of the Price-Anderson Act. These "no-fault" provisions are often used by supporters of Price-Anderson to demonstrate the "public benefits" of the system. The implication is that the nuclear industry has agreed to give something up in exchange for the public accepting a limit on the industry's liability. A closer look at the ENO provisions shows that the industry has very generously given up something it is not likely to have in the first place.

After a nuclear accident, the NRC (or DOE) is required to determine whether the event was an "extraordinary nuclear occurrence." The criteria used by the NRC are totally arbitrary, requiring a specific amount of off-site injuries and property damage. After the accident at Three Mile Island, the process proved so cumbersome that it took the NRC a full year to conclude that the accident was not an ENO. (The NRC recently issued a proposed rule revising the ENO criteria.) For the purpose of "efficiency" the ENO determination is not reviewable by any court. The arbitrary ENO distinction implies that persons suffering from a less serious accident should have to meet tougher conditions in order to recover than victims of a more serious accident.

If an accident is not an ENO, any claims for compensation are subject to normal state tort law. In most states the common law renders persons engaging in ultra-hazardous activities to be subject to "strict liability," which means that those filing claims do not have to prove negligence; all they must prove is the cause and extent of their damages.

If an accident is an ENO, then the "no fault" provisions of Price-Anderson are triggered. These essentially function the same as a strict liability standard, and therefore are of relatively little value in any state that already applies a standard of strict liability for ultra-hazardous activities. The ENO provision also requires defendants to waive a number of other legal defenses, including the state statute of limitations. Most legal analysts conclude that, except for the statute of limitations, none of these defenses are likely to be available to a nuclear power plant operator after an accident.

When the NRC submitted its recommendations on Price-Anderson to Congress in 1983, two Commissioners recommended that the ENO be redefined to include any "nuclear incident." As defined in the Atomic Energy Act, a nuclear incident is any occurrence which causes bodily injury or property damage as a result of materials released from a nuclear facility. Expanding the definition of an ENO would allow claims to be judged on their individual merits, rather than by reference to the severity of the damages suffered by other parties. This change would help establish an expedited legal process and eliminate the possibility that persons suffering injuries in different states would face unequal legal obstacles.

Supporters of the ENO concept argue that broadening it to include all nuclear incidents would encourage "nuisance suits." No legal standard, whether strict liability or ordinary negligence, can prevent claims from being filed. Plaintiffs already face an enormous burden in proving the cause and extent of their damages. If claims of questionable merit are filed, the strict liability standard on its own will not result in unjustifed awards.

RECOMMENDATION: The ENO definition should be amended to include any event which is considered a "nuclear incident" as defined in the Atomic Energy Act.

THE STATUTE OF LIMITATIONS: Outdated and Inequitable

In the event of an ENO, the Price-Anderson statute of limitations recognizes claims filed within 3 years of discovery, but not longer than 20 years after the accident. The effect of this statute of limitations is to arbitrarily dismiss many claims for latent injuries. According to medical research, approximately 4 out of 5 radiation-induced illnesses would not become apparent until more than 20 years after exposure. [16]

The intent of this statute of limitations was to allow a longer period of time for filing claims than would be allowable under most state tort laws; the Price-Anderson statute of limitations only preempts those state statutes which are more restrictive. Since the last renewal of the Price-Anderson Act, many states have adopted "discovery rules" which require the discovery of an injury before the statute of limitations begins to run. At least 36 states have adopted discovery rules [17], most of which would allow claims beyond the 20 year Price-Anderson statute of limitations.

As a practical matter, the insurance industry is strongly opposed to any increase in the length of the Price-Anderson statute of limitations. The insurers argue that their foreign reinsurers are not accustomed to such long statutes of limitations and are likely to withdraw insurance capacity if the statute of limitations were extended. This argument misses two critical points. First, as mentioned above, the effective statute of limitations in most jurisdictions is likely to be more than twenty years. Second, any accident which causes serious enough off-site damage to warrant concern about latent injuries is likely to cause more than $160 million in early damages. Since the insurers cover the "first dollar" of loss, they should expect to pay all of their $160 million in coverage very shortly after the event. Persons filing claims for latent injuries are likely to have an extremely difficult, if not impossible, task in proving the causal link between the accident and their injury. It is highly unlikely that awards for latent injuries will be successful if the immediate damages from the accident were less than $160 million.

RECOMMENDATION: The statute of limitations should assure fair and uniform treatment of latent injuries. A discovery rule, recognizing claims that are filed within 5 years after the discovery of the injury and the cause of action, should be substituted for the current 20-year statute of limitations.

COSTS OF INVESTIGATING, DEFENDING AND SETTLING CLAIMS: Encouraging Excessive Legal Costs

One of the most pervasive myths about Price-Anderson is that claims will be paid immediately after an ENO, without the usual legal hassle. While there is no doubt that the waivers of defenses will reduce legal expenses and time in court, the fact that all parties will probably need lawyers to go through the process is often overlooked. Even with the "no fault" system, claims filed by the public are likely to be challenged by lawyers hired by the insurance pools -- a process which will certainly be costly. (For example, a person who lost the use of a farm may find that the insurance pools do not agree with him on the value of his land and inventory; the industry lawyers would be expected to challenge the amount of the claim and offer a settlement.) One of the most egregious loopholes in the system is that it allows all of the costs incurred by the lawyers representing the insurance pools interest to be paid out of the "public compensation" fund.

When Congress renewed the Price-Anderson Act in 1975 an amendment prohibiting the costs of investigating, defending and settling claims from being paid out of the "public compensation" fund was adopted. Because of a drafting error the exclusion of these expenses only applied to the portion of compensation provided directly by the federal government. Now that the direct federal indemnity share has been phased out, these costs can be deducted from whatever funds exist in the post-accident compensation pool.

Because this loophole pays the industry lawyers out of the public compensation pool, they will have no incentive to limit legal costs, in fact they will have good reason to resist claims and delay settlement. These legal expenses could substantially reduce the amount of compensation available to the public. Although it is impossible to predict ahead of time just how high these costs might be, the response of the insurance industry is very revealing. Unlike standard insurance policies which pay for all costs of investigating, defending and settling claims in addition to the policy limits, the nuclear insurance pools have insisted writing policies for nuclear risks which include all of these costs within the policy limits.

RECOMMENDATION: Prohibit these costs from coming out of any public compensation fund, including the liability insurance provided by the nuclear insurance pool and any funds generated from post-accident assessments of utilities.

COMPENSATING LATENT INJURIES: Assuring Adequate Funds Over A Long Term

The difficult problem of developing a fair system for compensating latent injuries is shared by many hazardous industries. When there is a limited amount of money to compensate all immediate and long-term injuries, the problem is compounded. The current Price-Anderson Act requires the federal judge administering the compensation fund to set aside an unspecified portion of money to compensate late-arising claims. As was pointed out in the discussion above, the 20-year statute may effectively preclude many otherwise valid claims. A less restrictive discovery rule is likely to run into the problem of an exhausted compensation fund.

There are two fundamental challenges. First, assuring adequate compensation funds over several decades. Second, establishing a system which fairly compensates people for injuries for which there is a difficult burden of proof.

The first challenge is most appropriately solved through the NRC's annual assessment proposal. Any compensation system which begins with a strictly limited pool is likely to either undercompensate immediate victims because funds are reserved for future injuries, or vice versa. If a system of annual assessments were adopted, there would be an assured source of funds to compensate claims well into the future if needed, yet large amounts of money would not necessarily need to be reserved for that purpose.

The second challenge is more difficult. Courts and policy makers around the country are grappling with this in cases involving people exposed to radiation from nuclear weapons tests to workers exposed to asbestos. Persons suffering injuries face an almost insurmountable burden in proving the causal relationship between their illness and their exposure to a particular chemical, toxic agent or event.

RECOMMENDATION: This is an enormously difficult problem which is made even more difficult with an absolute cap on public compensation funds. Congress should appoint an independent study commission to examine this problem as it relates to nuclear accident victims and evaluate options that are being used for other hazards. This commission should be required to submit a report to Congress recommending the approaches, if any, that should be incorporated into the Price-Anderson Act.

SABOTAGE: Ending The Ambiguity

The Price-Anderson Act covers accidents to the public resulting from sabotage, as long as the release of radiation takes place either at the facility site or along a planned course of transportation. If material is diverted away from the site, or planned transportation route, it is not clear whether Price-Anderson coverage would apply. It is essential that the owners and operators of nuclear facilities take every conceivable precaution to prevent sabotage. This was an issue which was debated at length during the 1975 renewal of Price-Anderson. An amendment closing the gaps in coverage passed the Senate but was dropped by the Conference Committee. Thus, the issue remains unresolved.

RECOMMENDATION: Any damage to the public caused by the release of nuclear materials should be compensated in full under Price-Anderson. If the material can be traced to a specific facility, the owner/operator of that facility should be strictly liable for all damages to the public. If the material cannot be traced to specific source, the federal government should assume full liability for compensating all public damages.

PRECAUTIONARY EVACUATION: Covering All Expenses

In the event of an accident where a release of radiation is anticipated but does not actually occur, the costs of a precautionary evacuation could be quite significant. Coverage under the Price-Anderson Act is not triggered if there is no actual release of radiation. Any costs incurred by members of the public during a precautionary evacuation are not specifically covered under Price-Anderson. If the evacuation was triggered by an event at a commercial nuclear facility, the liability insurance coverage provided by the nuclear insurance pools would probably cover these costs. If the evacuation was triggered by an event at a DOE facility, or as a result of an accident involving a DOE shipment of nuclelar materials, the costs would not be covered under the current Act.

RECOMMENDATION: Any costs incurred by the public resulting from a precautionary evacuation should be explicitly covered by the Price-Anderson Act.

EMERGENCY RESPONSE COSTS: An Unfair Burden For States

The costs incurred by state and local governments in providing emergency response services during a nuclear accident are not specifically covered under the Price-Anderson Act. These costs could represent an enormous financial burden on a state and local government.

RECOMMENDATION: Emergency response costs incurred by state and/or local governments should be fully reimbursed under the Price-Anderson system.

NOTES:

1. Government Accounting Office Report: "Congress Should Increase Financial Protection To The Public From Accidents At DOE Nuclear Operations," September 14, 1981.

2. Five states are being considered for the first repository: Washington, Nevada, Texas, Utah, Mississippi and Louisiana. Seventeen states are being considered for the second repository: Connecticut, Georgia, Maine, Maryland, Massachusetts, Minnesota, Michigan, New Hampshire, New Jersey, New York, North Carolina, Pennsylvania, Rhode Island, South Carolina, Vermont, Virginia and Wisconsin.

3. In August 1983 a draft of NUREG-0957 (the NRC Report on Price-Anderson) was circulated widely. The draft report contained a section on nuclear safety which summarized previous studies of accident probabilities and consequences. The estimate of $10 billion for a mean accident at Indian Point was cited on page C-7 of that draft. Press reports at the time indicated that representatives of the nuclear industry were displeased with the discussion of accident consequences. When the final report was approved by the NRC Commissioners, the section on nuclear safety had been dropped.

4. "Nuclear Power: Hard Times and a Questioning Congress," Science, vol.187, March 21, 1975, p.1060.

5. Energy Daily, May 9, 1985, p.1.

6. Inside NRC, March 7 and 21, 1983.

7. Michael Jackson's 1984 "Victory Tour" concert series was insured for approximately $250 million. Business Insurance, July 16, 1984.

8. Hearings of the Joint Committee on Atomic Energy on Government Indemnity for Private Licensees and AEC Contractors Against Reactor Hazards (May 15, 16, 17, 18, 21 and June 14, 1956), p.44.

9. Two other bills have been introduced in the House, but not the Senate. They are H.R 51, introduced by Rep. Mel Price (D-IL) and H.R. 2665, introduced by Rep. Ted Weiss (D-NY).

10. [Prepared] Statement of James K. Asselstine, Commissioner, U.S. Nuclear Regulatory Commission, Before the Subcommittee on Energy and the Environment, House Committee on Interior and Insular Affairs, June 4, 1985.

11. The assured aggregate limit on industry liability under this bill would range from $1.6 billion to roughly $2.4 billion. The $1.6 billion estimate assumes a $10 million assessment of the 94 nuclear plants currently licensed. The $2.4 billion estimate assumes 115 nuclear plants at a $15 million assessment.

12. Remarks made by James Curtiss, Majority Counsel, Subcommittee on Nuclear Regulation of the Senate Environment and Public Works Committee, before the Energy and Environment Committee of the National Governors Association, Chicago, Illinois, May 13, 1985.

13. "Additional Information on Retrospective Nuclear Liability Insurance Proposed by NRC," Office of State Programs, U.S. Nuclear Regulatory Commission, April, 1985.

14. Written answers to series of questions regarding the Price-Anderson Act, prepared by NRC staff in preparation for a public meeting of the NRC Commissioners held on June 20, 1985.

15. Hearings of the Joint Commitee (see #8 above), pp. 76-85.

16. Advisory Committee on the Biological Effects of Ionizing Radiations, National Academy of Sciences/National Research Council, 1972 (commonly known as the BEIR Report), as cited by Daniel W. Meek in "Nuclear Power and the Price-Anderson Act: Promotion over Public Protection," Stanford Law Review, January 1978, p. 416.

17. Injuries and Damages from Hazardous Wastes--A Report to Congress in Compliance with Section 301(e) of CERCLA, September 1982, Part 2, pp. 13-78 and Superfund 301(e) Study--Update, Congressional Research Service, April 15, 1985. As cited in "Fact Sheet: Statutes of Limitations for Toxic Torts," by Janet Hathaway, Staff Attorney, Public Citizen's Congress Watch, Washington, D.C.

(ATTACHMENT #1)

TECHNICAL QUESTIONS REGARDING S.1225

Upon an initial review of S. 1225, there are a number of details which we have questions about.

1. On page 5, lines 1-2, the deferred premiums are set at "not less than $10,000,000 nor more than $15,000,000...." On lines 6-9 of that same page, the retrospective rating plan "shall not exceed the licensee's pro rata share of the aggregate public liability claims...." What if the aggregate liability of an accident requires payments of less than $10,000,000 from each licensee?

2. On page 5, lines 16-19, the Commission is given the authority to "establish amounts less than the standard premium for individual facilities taking into acount such factors as the facilities size, location, and other factors pertaining to the hazard." Does this envision a system which would have each plant separately rated? Would "other factors pertaining to the hazard" include a plants' operating and/or safety record? Could facilities be moved in and out of assessment categories at the discretion of the Commission?

3. On pages 6-7, lines 25 and 1, the per kilowatt hour assessment is based on electricity generated and sold by licensees following a nuclear incident. The NRC staff has raised a question about the availability of such funds after an accident, in light of the possibility that the Commission may order the shut-down a group of plants after an accident. Would it not be the case that the availability of funds generated under this layer of coverage would be better assured if the mill per kilowatt fee was based on electricity produced during a period of time before the accident?

4. On page 10, lines 23-25, "...excluding costs of investigating and settling claims and defending suits for damage..." is unclear. What are these costs excluded from?

5. On page 11, lines 16-19, what types of incidents occuring outside of the U.S. are contemplated?

6. On page 12, lines 19-20 and page 13, lines 8-9, what is meant by "reasonable"? Who is given the authority to determine that costs have become "unreasonable"?

7. On page 14, lines 8-9, "...any nuclear incident which will probably require payments by the United States under this section...." This is the only reference to the possible source of funds in excess of the liability limits. Does this statement assume that a compensation plan will require payments from the Federal Treasury?

8. On pages 14-15, lines 25 and 3-5, requires the President to submit a report including the "estimated requirements for full, equitable, and efficient compensation..." including "...one or more compensation plans, containing a recommendation or recommendations as to the relief to be provided...." Does this mean that the President's compensation plan does not have to include "full compensation," but could include partial compensation? Is it realistic to expect the President to be able to estimate the extent of latent injuries only 90 days after an accident?

9. On pages 16-17, lines 25 and 1-3, "...compensation plan shall immediately be referred to a committee (and all resolutions with respect to the same compensation plan shall be referred to the same committee) by the President of the Senate or the Speaker of the House...." What if more than one committee has legitimate jurisdiction over the compensation plan? Could a committee chair appeal to the President of the Senate or Speaker of the House for joint or sequential referral? Could different plans be referred to different committees?

10. On page 18, lines 1-25, if a resolution which is not amendable on the floor, fails to be approved, what happens next? Is the President expected to submit another plan? Who assumes responsibility for developing an alternative?

11. On page 5, lines 1-3 and page 7, lines 10-11 and page 12, lines 18-22, the liability of licensees is clearly limited to the amounts stated in this bill. Does this mean that Congress would have to amend the Price-Anderson Act if a compensation plan required payments of any persons indemnified beyond the amounts specified in this bill?

12. Adjustment for inflation? This bill renews the Price-Anderson Act for 25 years, shouldn't there be some adjustment for increasing the indemnity and assessment levels to keep pace with inflation?

(ATTACHMENT #2)

TABLE I:

ESTIMATED IMPACT OF $10 MILLION PER PLANT ASSESSMENTS ON INVESTOR-OWNED UTILITIES
(Based on 1983 Financial Data)

UTILITY	ASSUMED ANNUAL ASSESSMENTS (in millions)	PERCENTAGE OF INCOME AVAILABLE TO PAY COMMON STOCK (1983)	PERCENTAGE OF ANNUAL (1983) INCOME FROM RATEPAYERS	ANTICIPATED RATE IMPACT OF REACTORS NOW UNDER CONSTRUCTION
ALABAMA				
Alabama Power	$ 20	8.7%	1.1%	
ARIZONA				
Arizona PS	$ 8.7	3.9%	1.0%	56%
ARKANSAS				
Arkansas P&L[a]	$ 20	19.6%	1.7%	
CALIFORNIA				
So.Cal.Ed.	$ 27.7	4.5%	.63%	6%
Pacific G & E	$ 20	3.2%	.51%	25%
COLORADO				
P.S. of Co.	$ 10	11.1%	1.8%	
CONNECTICUT				
Connecticut L & P	$ 28.2	14.3%	2.1%	29%[b]
FLORIDA				
Florida P & L	$ 38.5	14.4%	1.1%	
GEORGIA				
Georgia Power	$ 20	6.6%	.73%	11%
ILLINOIS				
Commonwealth Ed	$125[c]	18%	2.7%	32%
Illinois Power	$ 8	4.3%	1.0%	58%

INDIANA				
Indiana & Michigan	$ 20	17.9%	2.3%	
IOWA				
Iowa Electric	$ 7	30%	2.5%	
KANSAS				
Kansas G & E	$ 4.7	5.1%	1.2%	62%
LOUISIANA				
Louisiana P & L	$ 13.9	16%	1.2%	38%[d]
MAINE				
Central Maine Power	$ 4.7	10.5%	1%	14%[d]
MARYLAND				
Baltimore G & E	$ 20	10.6%	1.8%	
MASSACHUSETTS				
Boston Edison Co.	$ 1.9	3.5%	.18%	
MICHIGAN				
Consumers Power	$ 20	8.1%	1.3%	
Indiana & Michigan	$ 20	18%	2.3%	
MINNESOTA				
Northern States	$ 30	17.6%	2.3%	
NEW HAMPSHIRE				
PS of New Hampshire	$ 5.9	5%	1.3%	67%
NEW JERSEY				
Jersey Central	$ 15	33.5%	1.2%	
Public Service E&G	$ 26.5	8%	1.03%	25%
NEW MEXICO				
PS of New Mexico	$ 3	2.6%	.77%	42%
NEW YORK				
Con Ed[d]	$ 10	1.9%	.2%	
LILCO	$ 11.8	4.1%	.82%	65%
Niagara Mohawk	$ 14.1	5.2%	.7%	19%
Rochester G & E	$ 11.4	15.1%	2.5%	28%
NORTH CAROLINA				
Duke Power	$ 55	14.9%	2.3%	15%[d]
Carolina P&L	$ 34.7	17.8%	2.1%	28%

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MISSISSIPPI				
Miss. P&L	$ 3.3	9.4%	.63%	20%[b]
MISSOURI				
Kansas City P&L	$ 4.7	4.5%	.85%	44%
Union Electric	$ 10	4.3%	.78%	42%
OHIO				
Cleveland Electric	$ 10.7	5.2%	.9%	31%[d]
Toledo Edison	$ 8.9	9%	1.8%	53%[d]
Ohio Edison	$ 10.7	4.7%	.71%	31%[d]
OREGON				
Portland Gen.Elec.	$ 6.8	8.5%	1.25%	
PENNSYLVANIA				
Met Ed	$ 10	--[e]	1.8%	
Penn P&L	$ 18	8.6%	1.4%	29%
Philadelphia Elec.	$ 27	8.4%	1.3%	33%
Duquesne	$ 7.5	6.1%	.9%	23%[d]
Penn. Elec. Co.	$ 5	17.5%	.78%	
SOUTH CAROLINA				
Duke Power	$ 55	14.9%	2.3%	15%
Carolina P&L	$ 34.7	17.8%	2.1%	28%
TEXAS				
Texas Util.Elec.	$ 17.6	3.8%	.5%	18%
Houston Industries	$ 6.2	2%	.17%	12%
El Paso	$ 4.7	6%	1.6%	89%
VERMONT				
Central Vermont PS	$ 4.2	26.2%	2.9%	
VIRGINIA				
Dominion Resources	$ 30	11.3%	1.2%	
WISCONSIN				
Wisconsin Elec	$ 20	14.8%	1.9%	

Notes:

Data compiled from The P.U.R. Analysis of Investor-Owned Electric and Gas Utilities, 1984 Edition, published by Public Utilities Reports, Inc.

And "Nuclear Power Plants in the United States, Atomic Industrial Forum, 1984. The assumptions regarding powerplant ownership used in this chart are detailed in Table II.

The impact of plants under construction on utility rates was compiled from "Nuclear Follies," Forbes, February 11, 1985.

a. Assumes no ownership of Grand Gulf.
b. Rate impact cited is the impact on the parent utility.
c. Assumes that Dresden 1, which has been shutdown since 1978, would be assessed.
d. Rate impact reflects more than one nuclear plant under construction.
e. Since the accident at Three Mile Island, earnings on common stock for Metropolitan Edison have not been large enough to pay a $10 million/plant assessment. Although TMI Unit II is not expected to operate in the future, it is still a licensed nuclear plant and would be subject to any post-accident assessment.

TABLE II:

OWNERSHIP OF NUCLEAR PLANTS BY INVESTOR-OWNED UTILITIES

(an asterisk indicates plants under construction)

ALABAMA
Alabama Power Co
Farley 1,2 (860 mwe)

ARIZONA
Arizona Public Service
29.1% of Palo Verde 1*,2*,3* (1270 mwe)

ARKANSAS
Arkansas Power & Light
Arkansas Nuclear 1 (850 mwe); 2 (912 mwe)

CALIFORNIA
Southern California Edison
80% of San Onofre 1 (436 mwe)
75% of San Onofre 2,3 (1100 mwe)
15.8% of Palo Verde 1*,2*,3* (1270 mwe)

Pacific Gas & Electric
Diablo Canyon 1 (1084 mwe); 2 (1106 mwe)

COLORADO
Public Service Co of Colorado
Fort St. Vrain (330 mwe)

CONNECTICUT
Connecticut Light & Power
34.5% of Haddam Neck (582 mwe)
81% of Millstone 1 (660 mwe); 2 (869 mwe)
52.6% of Millstone 3* (1150 mwe)
15% of Yankee Rowe (175 mwe)
8% of Maine Yankee (825 mwe)
6% of Vermont Yankee (514 mwe)
4% of Seabrook 1 (1150 mwe)

FLORIDA
Florida Power & Light
St. Lucie 1 (822 mwe)
85.1% of St. Lucie 2 (786 mwe)
Turkey Point 3,4 (666 mwe)

GEORGIA
Georgia Power Co.
50.1% of Hatch 1 (786 mwe); 2 (790 mwe)
50.7% of Vogtle 1*,2* (1100 mwe)

ILLINOIS
Commonwealth Edison
Dresden 1 (207 mwe) (shutdown)
Dresden 2,3 (794 mwe)
Zion 1,2 (1040 mwe)
75% of Quad Cities 1,2 (789 mwe)
LaSalle 1,2 (1078 mwe)
Byron 1,2* (1120 mwe)
Braidwood 1*,2* (1120 mwe)

Illinois Power
80% of Clinton (933 mwe)

INDIANA
Indiana & Michigan Electric
Donald Cook 1 (1030 mwe); 2 (1100 mwe)

IOWA
Iowa Electric & Power Co.
Duane Arnold (583 mwe)

KANSAS
Kansas Gas & Electric
47% of Wolf Creek (1150 mwe)

Kansas City Power & Light
47% of Wolf Creek (1150 mwe)

LOUISIANA
Louisiana Power & Light
Waterford 3 (1104 mwe)
38.5% of Grand Gulf 1 (1125 mwe)

MAINE
Central Maine Power
38% of Maine Yankee (825 mwe)
6% of Seabrook 1* (1150 mwe)
2.5% of Millstone 3* (1150 mwe)

MARYLAND
Baltimore Gas & Electric
Calvert Cliffs 1,2 (845 mwe)

MASSACHUSETTS
Boston Edison
Pilgrim 1 (670 mwe)
9.5% of Yankee Rowe (175 mwe)
9.5% of Haddam Neck (582 mwe)

MICHIGAN
Consumers Power
Big Rock Point (63 mwe)
Palisades (757 mwe)

Indiana & Michigan Electric
Cook 1 (1030 mwe), 2 (1100 mwe)

MINNESOTA
Northern States Power
Monticello (545 mwe)
Prairie Island 1,2 (530 mwe)

MISSISSIPPI
Mississippi Power & Light
33% of Grand Gulf 1* (1250 mwe)

MISSOURI
Kansas City Power & Light
47% of Wolf Creek (1150 mwe)

Union Electric
Callaway (1150 mwe)

NEW JERSEY
Jersey Central Power & Light
Oyster Creek (650 mwe)
25% of TMI 1 (819 mwe), 2 (906 mwe)

Public Service Electric & Gas
42.6% of Salem 1 (1090 mwe), 2 (1115 mwe)
42.5% of Peach Bottom 2,3 (1065 mwe)
95% of Hope Creek (1067 mwe)

NEW HAMPSHIRE
Public Service of New Hampshire
35.6 of Seabrook 1* (1150 mwe)
2.8% of Millstone 3* (1150 mwe)
5% of Haddam Neck (582 mwe)
5% of Maine Yankee (825mwe)
7% of Yankee Rowe (175 mwe)
4% of Vermont Yankee (514mwe)

NEW MEXICO
Public Service of New Mexico
10.2% of Palo Verde 1,2,3 (1270 mwe)

NEW YORK
Con Ed
Indian Point 2 (873 mwe)

LILCO
Shoreham* (846 mwe)
18% of Nine Mile Point 2* (1084 mwe)

Niagara Mohawk
Nine Mile 1 (620 mwe)
41% of Nine Mile Point 2* (1080 mwe)

Rochester Gas & Electric
R.E. Ginna (470 mwe)
14% of Nine Mile Point 2* (1080 mwe)

NORTH CAROLINA
Duke Power
McGuire 1,2* (1180 mwe)
Oconee 1,2,3 (860 mwe)
25% of Catawba 1*,2* (1145 mwe)

Carolina Power & Light
81.7% of Brunswick 1,2 (790 mwe)
83.8% of Shearon Harris 1* (900 mwe)
Robinson 2 (665 mwe)

OHIO

Cleveland Electric
51.4% of Davis Besse (890 mwe)
31% of Perry 1* (1205 mwe)
25% of Beaver Valley 2* (833 mwe)

Ohio Edison
35% of Beaver Valley 1 (833 mwe)
41.9% of Beaver Valley 2* (836 mwe)
30% of Perry 1* (1205 mwe)

Toledo Edison
48.6% of Davis-Besse 1 (890 mwe)
20% of Perry 1* (1205 mwe)
20% of Beaver Valley 2* (836 mwe)

OREGON

Portland General Electric
67.5% of Trojan (1130 mwe)

PENNSYLVANIA

Pennsylvania Power & Light
90% of Susquehanna 1, 2 (1050 mwe)

Philadelphia Electric Company
Limerick 1* (1055 mwe)
42.5% of Peach Bottom 2,3 (1065 mwe)
42.6% of Salem 1 (1090 mwe) 2 (1115 mwe)

Metropolitan Edison
50% of TMI 1 (819 mwe) 2 (906 mwe)

Pennsylvania Electric Company
25% of TMI 1 (819 mwe) 2 (906 mwe)

Duquesne Light Company
47.5% of Beaver Valley 1 (833 mwe)
13.7% of Beaver Valley 2* (836 mwe)
13.7% of Perry 1* (1205 mwe)

SOUTH CAROLINA

Carolina Power & Light
Robinson 2 (665 mwe)
83.8% of Shearon Harris (900 mwe)
81.7% of Brunswick 1,2 (790 mwe)

Duke Power
McGuire 1,2* (1180 mwe)
Oconne 1,2,3 (860 mwe)
25% of Catawba 1, 2 (1145 mwe)

TEXAS
Texas Utilities
88% of Comanche Peak 1*,2* (1150 mwe)

Houston Lighting & Power
31% of South Texas 1*,2* (1250 mwe)

El Paso Electric Company
15.8% of Palo Verde 1*, 2*, 3* (1270 mwe)

VERMONT
Central Vermont Public Service
31.3% of Vermont Yankee (514 mwe)
3.5% of Yankee Rowe (175 mwe)
2% of Maine Yankee (825 mwe)
2% of Haddam Neck (582 mwe)
1.5% of Seabrook 1* (1150 mwe)
1.7% of Millstone 3* (1150 mwe)

VIRGINIA
Dominion Resources (formerly VEPCO)
Surry 1,2 (775 mwe)
North Anna 1 (877 mwe) 2 (890 mwe)

WISCONSIN
Wisconsin Electric Power
Point Beach 1,2 (497 mwe)

Sources: The P.U.R. Analysis of Investor-Owned Electric and Gas Utilities, 1984 Edition, Published by Public Utilities Reports, Inc.

"Nuclear Power Plants in the United States", Atomic Industrial Forum, 1984.

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(ATTACHMENT #3)

June 21, 1985

MEMORANDUM

TO: Edward J. Markey, Chairman

FROM: Subcommittee Staff

SUBJECT: June 9, 1985 Incident at Davis-Besse

This is in response to your request for a history of the Nuclear Regulatory Commission's (NRC) efforts to improve the reliability and capacity of the Davis-Besse auxiliary feedwater system (AFWS). As you noted in your June 17, 1985 letter to NRC Chairman Nunzio J. Palladino, NRC recommended in May 1980 that an additional auxiliary feedwater pump should be installed at Davis-Besse as soon as possible. According to the NRC staff this recommendation was still pending at the time of the incident last week.

We emphasize that this memorandum only addresses the issue of the prior knowledge on the part of both the utility and NRC of the apparent inadequacy of the auxiliary feedwater system at Davis-Besse. There are other important issues raised by the Davis-Besse episode which, because of time constraints, are outside the scope of this memorandum.

The chronology that follows should be regarded as INCOMPLETE as our investigation is continuing. We have been unable, as yet, to obtain a complete set of documents from NRC. Additional documents and information of which we might be unaware could significantly alter our understanding of the history of this NRC recommendation.

Both the main feedwater system and the auxiliary feedwater system at Davis-Besse are comprised of two steam driven pumps. All four of these pumps failed on June 9, 1985 constituting a complete loss of feedwater. A comparatively small motor driven startup pump was subsequently manually started during the incident from outside the control room. However, according to the NRC staff, this pump alone is unable to cool the reactor. A 1979 analysis by Toledo Edison, endorsed by NRC, contends that the

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startup pump plus a makeup pump on the primary side of the plant can together avert core damage. This procedure was not necessary during the Davis-Besse incident, because the auxiliary feedwater pumps were manually restarted from outside the control room after approximately 12 minutes.

One obvious drawback to a system dependent on pumps powered by steam is that even if they are available, they will not function if the steam generators boil dry and there is no steam to power them. This is particularly significant because a design characteristic of the "once-through" Babcock & Wilcox (B&W) steam generators used at Davis-Besse is their rapid dryout time. In recognition of this weakness, the NRC has repeatedly recommended that Toledo Edison install a diverse drive (motor driven) auxiliary feedwater pump. While some documents cited in the chronology conclude that NRC should require this improvement by issuing an order, it appears that NRC never actually _required_ a new pump as far as we are aware.

Nevertheless, the documents that we have obtained and reviewed reveal that, beginning in 1979, the NRC staff has repeatedly and consistently urged Toledo Edison to install an additional auxiliary feedwater pump. In NRC's view, the new pump should be motor operated and of 100 percent capacity (_i.e._ capable of assuring adequate cooling independent of the other two auxiliary feedwater pumps). Given the number of failures and valve closures during the Davis-Besse incident it is not known whether a third auxiliary feedwater pump would have actually prevented the complete loss of feedwater on June 9, 1985.

Toledo Edison appears to have opposed the efforts of the NRC to require installation of an additional auxiliary feedwater pump. Instead, the company proposed improving the reliability of the existing auxiliary feedwater configuration. Toledo Edison communicated this idea to the NRC in letters and meetings and submitted a reliability analysis by EDS Nuclear Inc. supporting their position on December 31, 1981.

It appears that NRC took approximately 14 months to review Toledo Edison's analysis (i.e. until February 4, 1983). It then appears that NRC took an additional 14 months to respond formally to the company in writing (i.e. on April 23, 1984). NRC's evaluation of Toledo Edison's report once again concluded that a third auxiliary pump would improve safety and stated that the auxiliary feedwater system at Davis-Besse did not meet the failure rate criterion in the Standard Review Plan.

Despite NRC's strong statements on improving the reliability and capacity of the Davis-Besse auxiliary feedwater system, it appears that the matter slipped through the cracks in a paper war between the NRC and Toledo Edison that has lasted for almost six years. In recent years, the NRC Staff has considered issuing a requirement that would likely result in the installation of a third auxiliary feedwater pump at Davis-Besse and other plants with only two auxiliary feedwater pumps. A regulatory package was developed in August 1983 for the NRC's internal review group, the Committee to Review Generic Requirements (CRGR), before being issued to licensees. According to the NRC Staff, the proposal has not even been submitted to the CRGR as of today.

After notifying the NRC in October 1984 of a previously unanalyzed hazard involving the startup pump, Toledo Edison proposed installing a new motor driven startup pump in a November 12, 1984 application to amend the Davis-Besse operating license. The amendment, approved by NRC on January 8, 1985, requires special precautions to be taken with the existing startup pump until a new one can be installed in the next refueling outage. These actions were deemed necessary because certain failures could disable both auxiliary feedwater pumps. As a result, precautions proposed by the utility and required by the NRC include isolating the pump from the feedwater system and stationing an operator in the room with the startup pump whenever it is in operation.

The Subcommittee staff has learned that on April 24, 1985, when the startup pump was in operation, the NRC conducted a surprise inspection. The NRC inspector found an unlicensed operator asleep in the room with the pump in apparent violation of Paragraph 2.C.(3)(t) of the Davis-Besse license. Although the company took disciplinary action against the employee, NRC did not document this incident as a noncompliance or deviation. This would appear to indicate that no enforcement action is planned.

In a related matter, the procedure successfully used to initiate flow from the startup pump to the steam generator during the Davis-Besse incident appears to have been somewhat complex. According to a January 18, 1985 memorandum from William J. Dircks, Executive Director of Operations, to the Commission, five actions (four valve repositionings and the installation of fuses in the pump) had to be taken in order to operate the startup pump. These actions were all taken by one operator and involved different places in the plant. The reason this procedure was necessary appears to be precisely because of the company's January 1985 license amendment which isolated this pump from service.

The utility's proposed improvement to the auxiliary feedwater system is scheduled for the next refueling outage which we understand will occur during the Spring of 1986. Although Toledo Edison proposed installing the pump in November 1984 and NRC approved it in the early January, the company did not issue a purchase order until March 1985. We have not yet determined whether the upgrade proposed by Toledo Edison will: (1) constitute a separate train of auxiliary feedwater or just an additional pump to the existing lines; (2) be capable of cooling the core without the other two auxiliary feedwater pumps; (3) be automatic or manual; (4) be safety grade as are the other two auxiliary feedwater pumps.

The attached chronology does not document the many changes that have been made to the auxiliary feedwater system at Davis-Besse. Changes made by Toledo Edison over the years have undoubtedly improved the reliability of the auxiliary feedwater system over the one in place prior to the 1979 accident at Three Mile Island. Nevertheless, it appears equally clear that these efforts fall far short of the 1979 NRC recommendation. The information we have reviewed shows that the NRC has failed to solve the problem it first identified. This is troubling given the sense of urgency conveyed by internal NRC memoranda and reports.

In closing, it is worth highlighting an August 8, 1980 memorandum from Roger J. Mattson, Director of the Division of Safety Technology to Harold R. Denton, Director of the Office of Nuclear Reactor Regulation. This memorandum reviewed the May 1980 report (NUREG-0667) that had recommended that a diverse drive auxiliary feedwater pump was needed at Davis-Besse. It states that this recommendation was originally made in July 1979 and concludes that it should be accorded the "highest priority" and implemented "as soon as possible by issuing an order to the licensee." However, this memorandum notes that as of August 1980, Toledo Edison was still studying the 1979 recommendation and remarks: "This is too long a time to merely study such an important issue." Six years have now passed.

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CHRONOLOGY OF NRC RESPONSE TO THE AUXILIARY FEEDWATER SYSTEM

Nov. 1975	NRC publishes first Standard Review Plan which includes a branch technical position (ASB 10-1) that states auxiliary feedwater pumps should be powered by "...diverse power sources."
09-24-77	Loss of feedwater incident at Davis-Besse power; operators fail to recognize that the pilot operated relief valve (PORV) is stuck open for 20 minutes. This incident subsequently becomes recognized as the major precursor to the accident at Three Mile Island. (Note: between 1977 and 1979 there were approximately 20 incidents involving partial or complete loss of auxiliary feedwater at Davis-Besse. Four of these mishaps are listed among the top 169 contributors to severe core damage accident risk of all incidents between 1969-1979 in a NRC/Oak Ridge study, NUREG/CR-2497 vol. 1 and 2. These four incidents were ranked in order of the likelihood of resulting in a severe accident as #7, #46, #47 and #53.)
03-28-79	Loss of feedwater accident at Three Mile Island (TMI); operators fail to recognize that the PORV is stuck open for approximately 2 hours. Severe core damage and melting of uranium fuel occurs.
05-16-79	NRC Order shuts down Davis-Besse because of concerns raised by TMI accident. The NRC Order confirms modifications at Davis-Besse including: "Review all aspects of the safety grade auxiliary feedwater system to further upgrade components for added reliability and performance." And, "...the licensees will review and verify the adequacy of the auxiliary feedwater system capacity."
07-06-79	Davis-Besse allowed to restart. In lifting the May 16, 1979 shutdown order, the staff stated that it would require improvement in the auxiliary feedwater system at Davis-Besse: "While the staff recognizes that the AFW system is safety grade, we also note that the licensee has agreed to continue to review the performance of the AFW system for assurance of reliability and performance. Consistent with this long-term agreement, we will require that the licensee modify the plant to provide the greater degree of diversity offered by a 100

> percent capability motor operated AFW pump, or an alternative acceptable to the staff." (emphasis added)

1979-1980 Subsequent to the TMI accident, the Advisory Committee on Reactor Safeguards, the Presidential "Kemeny Commission" Investigation, and the NRC Lessons Learned Task Force each recommended increasing the reliability of auxiliary feedwater systems.

05-21-80 Publication of NUREG-0667, "Transient Response of B&W Designed Reactors." The report has 22 recommendations. Recommendation #3 is: "Installation of a diverse-drive AFW pump should be expedited at the Davis-Besse 1 facility." Recommendation #4 is: "The steam line break detection and mitigation system should be modified as necessary to eliminate adverse interactions between it and the AFW system."

08-08-80 Roger J. Mattson, Director, Division of Safety Technology writes a memorandum reviewing NUREG-0667 to Harold R. Denton, Director, Office of Nuclear Reactor Regulation. This review concludes that recommendation #3 of NUREG-0667 should be of the "highest" priority and "...should be implemented as soon as possible by an NRC order to the licensee." The memorandum notes that this is not a new requirement, but was first identified in the July 6, 1979 letter allowing Davis-Besse to restart after the TMI accident. The memorandum states:

> "This letter was written over one year ago. It is our understanding that the licensee is still reviewing possible options...This is too long a time to merely study such an important issue." (emphasis added)

09-05-80 TMI Action Plan issued which includes two items relating to auxiliary feedwater reliability (II.E.1.1 and II.E.1.2) Date of compliance unknown. NRC has informed the Subcommittee Staff that they believe compliance has been achieved. Documents confirming this assertion have yet to be provided.

01-23-81 Toledo Edison sends letter to NRC in response to 7-6-79 NRC restart order. Toledo Edison takes issue with NRC recommendation to install a 100 percent capacity diverse drive auxiliary feedwater pump. The letter concludes:

> "To bring this issue to final resolution, it is proposed that, prior to proceeding on any major plant modification, a risk reduction comparison be completed to provide an evaluation of the acceptable alternatives. This would allow us to optimize the plant

> response results, minimize the perturbation and still verify that the design provides an appropriate level of protection to the public health and safety now and after any such modification is complete."

04-02-81 NRC sends letter to Toledo Edison identifying six actions to improve the reliability of the auxiliary feedwater system at Davis-Besse. The NRC letter states that a meeting occurred on 03-05-81 with the licensee in which Toledo Edison stated that a new auxiliary feedwater pump "...would entail substantial costs and time to implement" and the matter should be subject to further analysis. According to NRC, "(t)he principle thrust of (Toledo Edison's) proposed reliability analysis would therefore try to demonstrate the acceptability of the reliability of the present two train AFWS at the Davis-Besse 1 plant." NRC rejected this approach and stated: "We believe that you should consider placing more emphasis on upgrading the existing startup feedwater train to provide diversity from the present steam driven AFWS, and thus improve system reliability." The sixth NRC recommendation is the installation of a diverse-drive auxiliary feedwater pump:

> "We are concerned with the dependency of both AFWS pumps on steam from the main steam lines. Other PWRs are known to have a similar configuration (e.g., Calvert Cliffs); however, because of the more rapid-dry out of the steam system in B&W plants, such a steam dependency is of more concern in Davis-Besse. The licensee should state plans for providing a third AFWS train which will utilize a pump powered from a source other than steam. A schedule of implementation should be provided."

06-29-81 Memorandum the Division of Safety Technology to the Office of Nuclear Reactor Regulation, recommending that NRC adopt a numerical reliability criterion in the Standard Review Plan of 10^{-4} to 10^{-5} for failure of the auxiliary feedwater system.

07-31-81 Memorandum from the Division of Systems Integration to the Office of Nuclear Reactor Regulation endorsing the 06-29-81 proposal to adopt a reliability criterion for the auxiliary feed water system. The memorandum states:

> "We propose to require all plants (including those operating plants which have not acted voluntarily) to provide three auxiliary feedwater pumps.... The numerical criterion

> still leaves a possibility for acceptance of a two pump AFW if other methods for cooling the reactor core during abnormal conditions are considered to justify a large unreliability of the AFWS."

July 1981 NRC publishes NUREG-0800 which approved and incorporated a numerical reliability criterion of 10^{-4} to 10^{-5} in the revised Standard Review Plan for the auxiliary feedwater system.

12-31-81 Toledo Edison transmits a reliability analysis prepared EDS Nuclear Inc., on the auxiliary feedwater system. The study concludes that an additional "third train" diverse drive feedwater pump would increase reliability by over an order of magnitude for non-seismic initiated accidents. The report also identifies another option termed "analysis based configuration" that would provide greater reliability than a third train of auxiliary feedwater. Toledo Edison's cover letter states that a new auxiliary feedwater pump would cost $1,200,000 while the "analysis based configuration" alternative would only cost $300,000. The "analysis based configuration" does not include any new pump and consists largely of procedural and valving modifications.

02-04-83 Memorandum from Division of Safety Technology to Division of Systems Interaction. This memorandum evaluates the EDS reliability analysis submitted by Toledo Edison. The NRC evaluation includes a review performed for NRC by Brookhaven National Laboratory (BNL). (The BNL report was subsequently published as NUREG/CR-3530 in February 1984). The NRC Staff evaluation also notes that "(b)ecause (of) lack of diversity in the AFW pumps, the Davis-Besse AFWS is particularly susceptible to potential common cause failures." The NRC Staff concluded:

> "The Davis-Besse AFWS is in the low reliability range and its unavailability exceeds the numerical criterion of 10^{-4} to 10^{-5} failure probability per demand presented in the Standard Review Plan (SRP). The addition of an independent third train will likely improve the AFWS unavailability to the acceptable range of the SRP criterion."

08-22-83 NRC Division of Systems Integration sends draft of package to be sent to NRC Committee to Review Generic Requirements (CRGR) before becoming a requirement. The memorandum includes as attachments a Regulatory Analysis and a proposed Generic Letter to be issued to licensees. The Regulatory Analysis states:

> "Previous staff evaulations performed in connection with Item II.E.1.1 of NUREG-0737 have indicated that those operating PWR plants with only a two pump train auxiliary feedwater (AFW) system cannot demonstrate adequate reliability or flexibility for assuring AFW system decay heat removal function as required for a number of significant potential core melt accident sequences."
>
> "The AFW system is required for all situations in which the main feedwater system is not available, which includes normal startups and shutdowns where the function is not provided for by the main feedwater system, anticipated operational occurrences and postulated accidents....Therefore, its failure is a dominant contributor to core melt accidents. A demonstration of adequate reliability and power diversity is necessary to comply with the requirements of General Design Criterion 34 as identified in SRP (Standard Review Plan) Section 10.4.9."
>
> "...full compliance and implementation of the fixes identified in II.E.1.1 of NUREG-0737 have failed to provide the full system reliability shown to be necessary in probablistic analyses of core melt sequences...."
>
> "Therefore, the staff proposes to require that modifications be made to the AFW system of the operating PWRs such that it is possible to demonstrate adequate reliability in accordance with the current SRP criterion 10^{-4} to 10-5 per demand)...."
>
> "Implemetation schedules for the proposed action will be determined on a case-by-case basis depending on availability of equipment and to avoid down time for completing system modifications. The significance of not taking the above action is to leave certain plants more vulnerable to severe accidents as a result of a failure of the decay heat removal function."

The Regulatory Analysis notes that the improvements could be evaluated under the long-term Unresolved Safety Issue (USI) of decay heat removal (A-45), but rejects this approach because study of this USI was not expected to be complete until 1985.

The draft Generic Letter to licensees contains much of the same information and wording as the Regulatory Analysis. It specifcally identifies 10 reactors, including Davis-Besse, that have not made the "necessary system modifications (additions of a third pump or other changes) to ensure that their AFW systems are capable of being operated in the high reliability range ...." The Generic Letter also noted that four reactors did not have diverse means of power. The proposed Generic Letter states:

> "The purpose of this letter is to require that you provide a third AFW pump (for each unit) capable of providing at least the minimum flow necessary to the steam generators for decay heat removal....The third pump(s) must also be capable of at least manual initiation from the control room. Further, those plants not meeting the diversity of power position for their AFW pumps are required to make the necessary modifications...."

The Generic Letter required confirmation from the licensees that changes would be made in 30 days and required a proposed design within 120 days.

08-26-83 Internal handwritten memorandum within the Office of Nuclear Reactor Regulation marked "EXPEDITE." The memorandum is from one staffer to four others and refers to the CRGR package authored four days earlier by Roger J. Mattson, then-Director of NRC's Division of Systems Interaction:

> "We need to get together ASAP on the attached CRGR package--Mattson is trying to stick a number of operating plants (~12 total) with a 3rd AFWS pump."
>
> "This action will have significant ramifications on A-45. We may come up with a more comprehensive cost-beneficial solution."
>
> "Their value-impact looks weak and will be shot-down by CRGE."

(Note: while the NRC Staff was to have completed its study of the decay heat removal unresolved safety issue (A-45) by 1985, the projected completion date is now 1987).

09-25-83 Memorandum from Divison of Safety Technology to the Divison of Systems Integration commenting on the draft CRGR package. This memorandum states that the regulatory analysis of the proposal should be

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more extensive and attaches a long list of comments and questions. The memorandum, however, concludes that a decision should be deferred:

> "The proposed action, if implementated independently will have significant ramifications for the USI A-45 program. Accordingly, further and more detailed regulatory analyses should be done to provide a good basis for deciding whether this issue should be done independently or combined with A-45. Until then, it is suggested that the decison be deferred."

The memorandum includes an attachment which states that representatives of those NRC divisions and branches involved in the proposed requirement held a meeting on September 13, 1983 and agreed that further work should be done before the package was forwarded to CRGR.

11-16-83 Memorandum from Division of Systems Integration to Division of Licensing. This memorandum transmits the NRC Staff evaluation of Toledo Edison's 12-31-81 reliability analysis from the Division of Systems Integration to the Division of Licensing and repeats the same conclusion as the Division of Safety Technology reported on 02-02-83.

12-07-83 Memorandum from Divison of Licensing to Divison of Systems Integration commenting on proposed draft CRGR package. The memorandum notes that the delay in responding to the 08-22-83 package "...resulted from the need to complete other higher priority work." The memorandum states that requiring a third pump was rated a low priority according to a cost-benefit analysis. The memorandum notes changes have or will be made at some plants.

01-16-84 Memorandum from Division of Safety Technology to Division of Systems Integration providing additional information on the CRGR package. The memorandum includes estimated frequencies of a core melt (per year) due to a loss of main feedwater. According to this memorandum, the mean probability of a core melt per year from this type of incident is 5.4 x 10^{-4} (or 1 chance 1,851). Note: the NRC provisional safety goal is 1 x 10^{-4} (or 1 chance in 10,000) per reactor year. This average estimate assumes that feed and bleed emergency cooling is not possible at Davis-Besse. It would appear that if this estimate were true, then the risk of a core melt at Davis-Besse from this one type of scenario is more than 5 times the probability of a core melt accident than the Commission recommends from all

	types of accidents at an individual plant.
04-23-84	Letter from the NRC Division of Licensing to Toledo Edison providing the NRC Staff evaluation of the licensee's 12-31-81 reliability analysis and the BNL report (NUREG/CR-3530). The NRC letter notes the opposing conclusions of the NRC and BNL on the one hand, and Toledo Edison on the other hand, and concludes that the Davis-Besse auxiliary feedwater system does not comply with the Standard Review Plan reliability criterion.
11-09-84	Memorandum from Division of Safety Technology to Division of Safety Systems Intergration providing additional information on the CRGR package. This memorandum is in response to a 07-18-84 request for additional information.
11-12-84	Toledo Edison submits application for license amendment concerning the startup feedwater pump (SUFP). After identifying a previously unanalyzed hazard in which mishaps involving the startup pump could disable both auxiliary feedwater pumps, certain precautions were proposed until a new startup pump could be installed in a different location during the next refueling outage.
01-08-85	NRC approves 11-12-84 request to amend the Davis-Besse license (Amendment No. 83). The amendment includes license conditions which isolate the existing startup pump and require that an operator be stationed at the pump to monitor it whenever it is in operation. The amendment also states that a new startup pump will be installed during the next refueling outage (Spring 1986).
06-20-85	Memorandum from the NRC Committee to Review Generic Requirements to the Subcommittee staff stating that the regulatory package for improving the reliability of auxiliary feedwater was never submitted to CRGR. According to phone calls to the Office of Nuclear Reactor Regulation, this is because staff comments have yet to be resolved and incorporated into the package.

(ATTACHMENT #4)

THE NEW YORK TIMES, WEDNESDAY, MAY 22, 1985

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N.R.C. Underestimates

To the Editor:

The chances for a nuclear meltdown in the next 20 years are underestimated by the Nuclear Regulatory Commission. The 50-50 estimate you speak of is a shot in the dark all right, but it is optimistically biased. Estimates of substantially lower risks being advanced by nuclear-industry spokesmen are simply cavalier quantifications of wishful thinking.

You are correct: the uncertainties in probability estimates of accidents with long chains of events are very large. Such estimates may be off by at least a factor of 10. So comparing 1 in 10,000 to 3 in 10,000 is not very meaningful. The 50-50 chance of a meltdown over the next 20 years may very well be attributed to just 17 or 20 plants with embrittled reactor pressure vessels, which may rupture under pressurized thermal shock. Such a shock may be initiated and sustained by a variety of failures, notably of nonsafety-grade control systems. Pressurized thermal shock transients have taken place, but luckily, in new plants with vessels not embrittled. Furthermore, in case of a catastrophic vessel rupture, and subsequent core meltdown, a large containment building will most likely also fail. They are not designed to accommodate such accidents.

The Nuclear Regulatory Commission should not write this issue off on the basis of a proposed rule pending before it. This rule is an amalgam of N.R.C. staff's preconceived notion, industry pressures, bad advice from the commission's advisory committee and wishful thinking. This is the stuff that accidents like Three Mile Island are made of. The commission should establish an ad hoc panel of experts with membership from outside the agency and the nuclear community to assess this serious, multidisciplinary problem thoroughly and independently. It is a technical problem, and it should be resolved with the best possible technical judgments and advice the commission can possibly muster.

The laws of physics are not subject to change by wishful thinking, rule making or legislation. If we are to achieve and maintain an acceptable level of nuclear safety, it is important that the majority of the members of

Daniel Adel

Congress face the technical realities of nuclear power and rely less on special interests seeking to enhance their near-term cash flow at the expense of public health and safety.

As Congress considers legislation to reform the nuclear-regulatory system, it should first construct a pragmatic system of incentives for safety for nuclear utilities, including increased penalties for safety violations and substantially increased liability for accidents. Only then, it should consider reducing overprescriptive kinds of regulations. This in concert with recommendations contained in a 1983 report on nuclear-safety regulation published by the American Enterprise Institute for Public Policy Research. Time is of the essence, and is not working in our favor.

DEMETRIOS L. BASDEKAS
Rockville, Md., May 13, 1985

The writer is on the Nuclear Regulatory Commission's technical staff.

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The **Chairman**. Thank you very much.

Mr. Griffith.

STATEMENT OF STEVE C. GRIFFITH, JR., SENIOR VICE PRESIDENT AND GENERAL COUNSEL, DUKE POWER CO., ON BEHALF OF THE ATOMIC INDUSTRIAL FORUM, INC., AMERICAN NUCLEAR ENERGY COUNCIL, AND THE EDISON ELECTRIC INSTITUTE

Mr. **Griffith**. Thank you, Mr. Chairman. I'll try to be brief.

My name is Steve Griffith. I am senior vice president and general counsel of Duke Power Co. My statement is on behalf of the Atomic Industrial Forum, the American Nuclear Energy Council, and the Edison Electric Institute.

In 1978, it was my privilege to argue the case involving the constitutionality of Price-Anderson before the Supreme Court of the United States. The Court not only upheld the constitutionality of Price-Anderson, it recognized that Congress had put potential claimants in a far better position for the full spectrum of potential accidents than they would be if left to only the funds of the person liable and conventional tort remedies.

In effect, the Court recognized that while Price-Anderson limits liability, it does not limit public compensation. Mr. Chairman, there is a limit to our ability to foresee and provide correctly for the full range of circumstances that might prevail after a very large accident. It makes sense to establish mechanisms before the fact to assure a large pool of funds almost immediately, sufficient to deal completely with low- and medium-consequence events, and sufficient to deal promptly with the more pressing needs for compensation in a high-consequence event.

That's what prior Congresses chose rightly to do, but it does not make sense for Congress to tie itself to the tort system and judicial administration of claims when it might be more equitable, more expeditious, and indeed less costly to adopt after the event other mechanisms to provide and disperse compensation tailored to the peculiar circumstances.

A limit on liability permits this. Critics often charge that the industry has given up nothing and received large benefits in return. By far the largest and most significant burden assumed by the nuclear utility industry, however, is that all nuclear plant licensees have in effect agreed to be insurers of their fellow licensees through the retrospective premium system accepted by the industry and enacted in 1975. This is a burden, Mr. Chairman, without parallel.

Another criticism of Price-Anderson is that it fails to punish wrongdoers. Price-Anderson wasn't intended to do that. It uses the tort liability system merely as the vehicle for compensation. When compensation is the goal and the tort system is the means, it is unwise to attempt to engraft inconsistent notions of punishment on the system. That should be left to the appropriate regulatory mechanism.

Finally, one hears the argument that Price-Anderson was intended to be temporary legislation. The short answer to that is that the Government indemnity or insurance provisions of the original act for commercial activities was intended to be temporary and has, as intended, been phased out under the 1975 amendments.

Let me now turn to the bills pending before you, S. 1225. We are gratified to see that S. 1225 retains the fundamental structure of Price-Anderson, including especially a definite limitation on liability. A definite limit is essential because it is the keystone to channeling and avoids the fragmentation of insurance, thus ensuring substantial funds to pay claims no matter who is liable.

However, under S. 1225 the proposed financial burden is too great on licensees who would be in no way at fault, nor in any way casually connected to, nor in a position to prevent any accident. The NRC would probably set the secondary assessments at the maximum $15 million limit. Add to this a licensee's share of an additional $500 million in the proposed third layer, and the burden on those not responsible for the accident is even greater.

As to the concept of the third layer, we believe there are some drawbacks to using such a device to generate funds to pay claims, and other alternatives might be preferable to increasing the second layer than by adding a third as the proposal is presently framed. The clarifying amendments that provide procedural mechanisms for expeditious action on recommendations for the present as to how best to provide full compensation even if all primary and secondary insurance proceeds are exhausted would provide even greater assurance than the present law if Congress means to see that full compensation is provided, and we endorse those.

S. 445. This bill would destroy the delicate balance of competing objectives and interdependent parts that make Price-Anderson function. Section 2 of S. 445 would strike subsection 170(e), thereby eliminating both limitation on liability and the congressional commitment to provide full compensation to the public in the event available funds under the Price-Anderson system were insufficient. We are opposed to these features of the bill.

Limitation on liablity is one of several interdependent parts that permit Price-Anderson to operate and to achieve economic efficiency through channeling of financial burden of liability to the licensees.

Section 3 of the bill would have the effect of extending the waivers of defenses to any nuclear incident which at present are triggered by an NRC extraordinary nuclear occurrence determination.

The NRC's 1983 recommendations are covered in my prepared text. Here I will address only the drastic change that the NRC at that time proposed. The Commission proposed in its 1983 report that the present $5 million per licensed reactor per nuclear incident retrospective premium assessment and the current floating but ascertainable limitation on liability be replaced with a $10 million annual cap on assessments, but no limitation at all on liability per incident.

This has the effect of creating unlimited liability and unlimited assessment subject only to an annual limit on the drain on utility cash flow. As a matter of fairness, Mr. Chairman, industry, its suppliers and investors, have proceeded in reliance upon an ascertainable limitation on liability, and imposing the obligation of being insurers in an unlimited amount on all licensees is simply wrong and unfair.

The public as a whole is better served by a system that retains the present structure of the act, including a definite limit. If, as we all firmly believe, an accident having major consequences for the off-site public will never occur, then consumers are better served by a system that does not impose artificial costs, provides a high degree of assurance of full public compensation for all but the least probable events, and provides the flexibility to switch to a different system for a truly major accident.

Thank you, Mr. Chairman.

[The prepared statement of Mr. Griffith follows:]

TESTIMONY OF STEVE C. GRIFFITH, JR.
SENIOR VICE PRESIDENT/GENERAL COUNSEL
DUKE POWER COMPANY
ON BEHALF OF
ATOMIC INDUSTRIAL FORUM, INC.
AMERICAN NUCLEAR ENERGY COUNCIL
AND
EDISON ELECTRIC INSTITUTE
ON
THE PRICE ANDERSON ACT
BEFORE THE
SUBCOMMITTE ON ENERGY RESEARCH AND DEVELOPMENT
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

June 25, 1985

My name is Steve C. Griffith, Jr. I am Senior Vice President and General Counsel of Duke Power Company. My statement is on behalf of the Atomic Industrial Forum ("AIF"), The American Nuclear Energy Council ("ANEC") and the Edison Electric Institute ("EEI").[1] AIF is an association of over 500 domestic and overseas organizations interested in the development of peaceful uses of nuclear energy. Its members include electric utilities, manufacturers, architect-engineers, mining and milling companies, financial institutions, government entities, labor unions and

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1/ It is my understanding that both the American Public Power Association and the National Rural Electric Cooperative Association will be communicating separately with the Committee on behalf of their respective members in support of legislation to renew the NRC's Price Anderson authority.

others involved in nuclear industry matters. ANEC represents more than 100 organizations having an interest in nuclear power, including privately, publicly, and cooperatively-owned utilities, manufacturers, architect-engineers, and various other firms involved in the nuclear electric power industry and its supporting fuel cycle. EEI is the association of investor-owned electric utility companies and its members generate about 76% of the electricity in the United States.

Members of AIF, ANEC, and EEI have made substantial commitments to the use of nuclear energy in the generation of electricity. Duke Power Company is currently operating six nuclear units and plans to bring a seventh unit on line in 1986.

Mr. Chairman, the Price Anderson law is enlightened, public benefit legislation. I say that not just because it has made possible private investment in realizing the potential of nuclear energy for the generation of electricity, which it has. Even more importantly, in the event of a nuclear accident, it achieves its paramount objective of assuring prompt compensation of legitimate claims from a large pool of funds without unnecessary procedural obstacles.

Back in 1978, I argued the case involving the constitutionality of Price Anderson before the Supreme Court of the United States. The Court not only upheld the constitutionality of Price Anderson, it recognized that Congress had put potential claimants in a far better position for the full spectrum of potential accidents than they would be if left to only the funds of the person liable and conventional tort remedies. I find it surprising and, frankly, disturbing that some of the arguments that were rejected by the Supreme Court in 1978 are still being made in 1985, as if the Supreme Court had never spoken.

The Supreme Court concluded that the public receives substantial benefits compared to conventional legal remedies no matter who is liable. Claimants would receive prompt and, in all but the most improbable accidents, full compensation. Even for a large accident, substantial funds would be available for immediate needs and, the Court emphasized, Congress has pledged to provide such additional compensation as might be warranted. In effect, the Court recognized that while Price Anderson limits liability, it does not limit public compensation.

From the very beginning, the Congress recognized that the limitation on liability would provide a stopping point at which the legislature could, in the event of a very large accident, shift from the tort system managed by the courts, for example, to an administrative compensation system. Under such a compensation system, Congress could, if it wished, eliminate most of the transaction costs associated with tort recovery and even judicial approval of settlements.

Mr. Chairman, there is a limit to our ability to foresee and provide correctly for the full range of circumstances that might prevail after a very large accident. The best-informed estimates are that there would be far fewer early health effects, deaths, or latent health effects than previously supposed, and that the potential for property contamination, evacuation costs and lost wages would predominate. It makes sense to establish mechanisms before the fact to assure a large pool of funds almost immediately, sufficient to deal completely with low-and median-consequence events and sufficient to deal promptly with the more pressing needs for compensation in a high-consequence event. That's what prior Congresses rightly chose to do. But it does not make sense for Congress to tie itself to the tort system and judicial administration of claims when it might be more equitable, more expeditious and indeed less costly to adopt, after the event, other mechanisms to provide and disburse compensation tailored to the peculiar circumstances. Prior Congresses recognized that the limitation on liability preserves this flexibility, which cannot otherwise be cleanly accomplished under our legal system.

Those who would drastically change the fundamental structure of Price Anderson are really saying that they have no faith that Congress will honor the promise of full compensation. At the same time, by suggesting that application of the tort system should be preserved with all of its transaction costs and inefficiencies they are in no way assuring that anyone incurring damages as a result of a nuclear accident would be compensated. Quite apart from that, their approach would require some new approach if any could be devised to secure judicial management of claims for accidents for which primary and reasonable levels of secondary insurance are sufficient and would preclude expeditious adoption of an alternative system for processing claims in excess of insurance.

Critics often charge that the industry has given up nothing and received large benefits in return. Here again, the Supreme Court has spoken, and recognized that Congress sought uniformity because strict liability would not necessarily be clear-cut in every case. The Joint Committee on Atomic Energy was sufficiently concerned in 1965 by the potential problems pointed out by Professor Cavers of Harvard Law School[2] that it enacted the 1966 "waivers of defenses" amendments.

By far the largest and most significant burden assumed by the nuclear utility industry, however, is that all nuclear plant licensees have in effect agreed to be insurers for their fellow licensees, through the restrospective premium system accepted by

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2/ These included possible delays in establishing the application of strict liability in some states and outright obstacles to even strict liability in cases where sovereign immunity applied or statutes of limitations had run, or in the event of accidents caused by natural disasters of unprecedented gravity or the unforseeable supervening acts of third parties.

the industry and enacted in 1975. As in any insurance arrangement, licensees subscribe for no more than a fixed amount (in this case a regulatory and statutory ceiling) but their liability for assessments is truly that of an insurer -- irrespective of any fault or even causal connection to the accident. That is a burden without parallel in any other industry, and if one is searching for a quid pro quo, one need go no further than the public benefits brought about by the retrospective assessments, which assure an additional pool of funds that is presently almost three times the first layer that private insurance provides.

Another argument that critics make is that Price Anderson transfers the risk of accidents to those least able to deal with it, individuals with claims for damages. That is not so. The essence of insurance is risk spreading. The first layer of risk, represented by the first tier of prepaid nuclear liability insurance, $160 million at present, is borne by licensees and their customers to the extent of aggregate net premiums and in the short run by the insurers and their investors (or mutual policyholders) to the extent of greater losses up to policy limits. The second layer of risk, $475 million at present, is represented by the retrospective assessment coverage provided by licensees and administered by the insurers, and is borne by the customers or investors (or both) of nuclear plant licensees. If there is a third layer of risk, that is, if further funds are appropriated in accordance with the Congressional commitment under present law, it is borne by the public at large, which is not unreasonable, since the public at large benefits from the day-to-day avoidance of air and water pollution and low fuel costs characteristic of safe, normal operation of more than ninety (90) nuclear plants across the nation. Those with unsatisfied claims only bear the risk if one grants the critic's premise that Congress will renege on its promise.

Another criticism of Price Anderson is that it fails to punish wrongdoers. It isn't intended to. Let me explain.

When the subject is a public compensation system like Price Anderson, it is well to keep that compensatory purpose in mind and not to be too much distracted by the terminology of our traditional legal process. In particular, Price Anderson uses tort liability merely as the vehicle for compensation. In this context, liability, especially strict liability, does not necessarily have all of the traditional trappings of guilt and punishment. Under Price Anderson, the person (or persons) liable under the omnibus definition of the insured serves merely as a conceptual conduit for the direct payment to claimants of primary and secondary insurance proceeds. Attempting to use this same system simultaneously to punish or exact retribution from putative wrongdoers through exclusions from insurance was considered by the framers of Price Anderson, but was rejected because to do so would have carried a high risk of interfering with the compensatory purpose of the law.

To take just one example, excluding gross negligence was considered and rejected because the grossly negligent defendant might be judgement-proof and in any event could hardly be counted on to have over a half billion dollars of his own funds from which to pay claims. By definition, he would not have applicable insurance. While using the tort system and insurance exclusions to punish would be inconsistent with Price Anderson's compensatory purpose, there is nothing in Price Anderson to preclude (or that would reimburse) civil or criminal fines. In short, when compensation is the goal, and the tort system is the means, it is unwise to attempt to engraft inconsistent notions of punishment on the system. That should be left to the appropriate regulatory mechanisms.

Finally, one hears the argument that Price Anderson was intended to be temporary legislation. The short answer to that is that government insurance (i.e. indemnity) for commercial activities was intended to be temporary, and has, as intended, been phased out under the 1975 amendments. If anyone thought in 1957 that we would find in later years that the potential for a large accident was zero, and hence thought that our society would prospectively no longer need a special insurance and liability system, the error of that premise was clear by the time of the 1965 extension. The probabilities of accidents with offsite consequences are less, and the consequences in terms of human health also less, but neither the probability nor the consequences can be set at zero. I don't know of a single informed person who seriously believes that we don't need a contingency plan for nuclear accident liability. Our most adamant critics complain about special treatment for nuclear power when other industries rely on insurance and standard tort law, but none suggests we abandon mandatory insurance or the waivers of defenses. Those of our critics who have not bothered to familiarize themselves with the history of the nuclear industry and of atomic energy legislation may be unaware that prior Congresses intended to and did enact a system to induce private investment and assure public compensation under which liability coverage coextensive with liability exposure would endure for the duration of that exposure. With your permission, I will now trace some of that history.

Background

The original Price-Anderson law, as enacted in 1957, had the dual purposes of assuring compensation to the public in the event of a major nuclear accident and of removing the potential liability obstacle to private sector investments in nuclear power. The potential liability issue was specifically found by the Joint Committee on Atomic Energy to be a principal factor tending to frustrate the realization of the goals of the 1954 Atomic Energy Act, which had sought, for the first time, to make full use (under a licensing rather than government contract regime) of the free enterprise system in encouraging the widespread industrial applications of atomic energy for peaceful purposes. The potential liability issue and, equally important, the potential chaotic situation for claimants following a large nuclear accident, were pointed out in the study by the Legislative Drafting Research Fund of the Law school of Columbia University entitled, Financial Protection Against Atomic Hazards.

The potential liability obstacle was removed by the enactment of the Price Anderson amendments to the Atomic Energy Act in 1957. The original Price Anderson law provided $500 million in government funds and required that private financial protection (which as a practical matter equated to nuclear liability insurance) be maintained in the maximum amount available, then $60 million. Thus, the original Price Anderson amendments limited liability to the sum of government indemnity and private insurance, which remained at $560 million. Both the private insurance and the government indemnity were "omnibus" in nature, so that not only the named insured (or the person with whom an indemnity agreement was executed) was covered, but any other person who might become liable would thereby become an insured (or a person indemnified).

This "omnibus" feature had important implications for claimants in situations where the only person liable under current legal principles might be underinsured, uninsured or even judgment-proof. The "omnibus" approach to coverage also had important implications in terms of economic efficiency and maximizing insurance capacity. For example, all subtier contractors and suppliers, as well as nuclear steam supply system vendors, architect-engineers, and constructors were covered under a single liability policy and a single indemnity agreement. The insurance premiums and indemnity fees were paid for by the electric utility licensee. The various principal contractors and their subtier vendors and suppliers did not need to buy insurance against this risk and include redundant nuclear liability insurance premiums or liability risk factors in their pricing. Moreover, despite the unusual nature of the risk from the insurance underwriting perspective, (i.e., postulated accidents with very low probability, potentially very large consequences and no actuarial data), the insurers were able to provide what was then an unprecedented amount of capacity. This was because the insurable financial exposure for a single facility could be identified in advance and the risk insured through a single policy. The potential for pyramiding of claims arising out of the coverage, through separate policies, of a large number of related and unrelated parties involved in design, construction or operation of a single facility could thus be avoided and the available capacity of the industry could be committed and would be available no matter what private party, in privity with the licensee or not, turned out to be liable.

The original Price Anderson law also provided for the outlines of a system of claims administration and retained the flexibility to provide by additional legislation for further measures such as direct appropriations to pay claims in excess of the limitation on liability or to establish an after-the-fact alternative administrative compensation scheme for such any excess claims.

In 1965, Congress took up an amendment to extend Price Anderson coverage to facilities that might receive construction permits after August 1, 1967. The extension of Price Anderson coverage to subsequent licensees was passed, along with a technical amendment that had the effect of fixing limitation on liability at $560 million (whereas the original law would have allowed the limitation to "float" upwards with any increases in nuclear liability insurance). Under the amendment, increases in prepaid nuclear liability insurance above $60 million would reduce the government's $500 million indemnity obligation and perhaps even eventually phase out that obligation.

During the 1965 extension hearings, concern was expressed that the original legislation might have fallen short of its goal to provide a high degree of assurance of compensation to the public in the event of a major nuclear accident. Accordingly, building on ideas put forward by Associate Dean Cavers of Harvard Law School, the Atomic Energy Commission, at the direction of the Congressional Joint Committee on Atomic Energy, proposed a series of amendments to Price Anderson in 1966 that were designed to remove unnecessary substantive or procedural hurdles to the speedy satisfaction of legitimate claims. The Atomic Energy Commission proposed, and the industry accepted, a system of mandatory, self-executing waivers of defenses or of elements of claims (*e.g.*, defenses based on assumption of the risk, contributory or comparative negligence, governmental or charitable immunities, or elements of claims based on proof of defendant's fault or claims not brought within applicable state statutes of limitations, but within a three-year discovery and ten-year-from-the-event period provided in the amendments) that, in the aggregate, had the effect of creating strict liability in the event that there was a substantial, abnormal release having measurable and substantial offsite consequence. These changes were incorporated into the 1966 amendments, along with provisions for emergency assistance payments to be made (without securing releases) to cover evacuation expenses and the like, and, when the waivers of defenses apply, provisions for consolidation of claims in a single federal district court.

In 1975, further refinements were made to the public compensation features of Price Anderson and to phase out major reliance on government indemnity for accidents involving large commercial nuclear power facilities. The 1975 amendments extended the waivers of statutes of limitations from those shorter than ten to those shorter than twenty years (while retaining the three-year discovery provision). They also established a secondary layer of retrospective premium insurance that would involve assessments of between $2 and $5 million per reactor (as established by NRC) against each licensee for any one nuclear incident. This system was coupled with the limitation on liability provision in such a way that the retrospective premium insurance would phase out government indemnity (as it had earlier been hoped prepaid insurance would do). At that point, the limitation on liability would equal the sum of primary and secondary coverage and would "float" upwards both as prepaid insurance increased and as more facilities received operating licenses. In these respects, the Congress sought to accelerate the "phasing out" of government indemnity initiated by the 1965 amendments and to return to the original concept of a "floating" limitation on liability. The 1975 amendments also extended Price Anderson coverage to facilities that received construction permits after August 1, 1977. Finally the 1975 amendments provided more clearly in subsection 170 e and 170 o what had theretofore been stated only

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in the legislative history: that Congress would provide compensation for claims in excess of the limitation on liability, should that situation ever arise.

It is important to understand that Price Anderson involves a balancing of benefits and burdens. This was recognized the the Supreme Court in its 1978 decision in Duke Power Company v. Carolina Environmental Study Group, when it said:

> "The Price Anderson Act not only provides a reasonable, prompt and equitable mechanism for compensating victims of a catastrophic nuclear incident, it also guarantees a level of net compensation generally exceeding that recoverable in private litigation. Moreover, the Act contains an explicit congressional commitment to take further action to aid victims of a nuclear accident in the event that the $560 million ceiling on liability is exceeded. This panoply of remedies and guarantees is at the least a reasonably just substitute for the common-law rights replaced by the Price Anderson Act."

As mentioned above, it is also important to realize that Price Anderson achieves a true economic efficiency by avoiding the layering of insurance premiums and/or risk factors in pricing. It does this by effectively "channelling" the financial burden of liability for offsite damages to the licensee operating the nuclear power reactor and providing for potential, but limited assessments against other licensees. Limitation on liability is an essential ingredient to achieve channelling under the fundamental Price Anderson technique of leaving liability to state law but superimposing waivers of defenses and limitation on liability as a matter of federal law. The Price Anderson system involves a delicate balance of mutually interdependent elements. The licensee coverage worked well in the case of TMI, the only instance in which it has been substantially called upon.[3] Price-Anderson, as it now stands, seems to achieve the goals that Congress had for it and its basic structure ought not to be changed absent the most compelling reasons. We have not seen any evidence of deficiencies that would require changes, such as the wholesale restructuring involved in some of the NRC recommendations and proposed in S. 445. But first, let me address the most recent bill, S. 1225.

S. 1225

Mr. Chairman, inasmuch as an excellent summary and section-by-section analysis of S. 1225 appears in the Congressional Record for May 24, 1985, I will not even attempt to summarize the bill. Instead, let me just say that we are gratified to see that S. 1225 retains the fundamental structure of Price Anderson, including especially a definite limitation on liability. A definite limit is essential because it is a keystone to channeling and avoids the fragmentation of insurance, thus assuring substantial funds to pay claims no matter who is liable. A definite limit also minimizes

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3/ I will discuss later NRC's rulemaking activities to make the administration of the extraordinary nuclear occurrence determination even more workable.

the imposition of artificial costs through the addition of risk factors on the sale of our securities and permits the transition to an alternative compensation system, as I discussed earlier.

However, under S. 1225, the proposed financial burden on licensees in no way at fault, causally connected to, or in a position to prevent the accident, and on their customers and investors or both, is too great. NRC would probably set the secondary assessments at the maximum $15 million. Add to this a licensee's share of an additional $500 million in the proposed third layer, and the burden on those not responsible for the accident is even greater. We recognize that the bill would permit NRC to set annual limits on assessments or collections under both the second and third layer, but there is no assurance that this would be done and the total is in any event too large, considering that quite a number of licensees have multiple operating plants.

As to the concept of the third layer, we believe that it suggests an interesting alternative to increasing retrospective assessments above present levels, and that it is certainly preferable to the NRC proposal of indefinite assessments of $10 million per license per year. However, there are some drawbacks to using such a device to generate funds to pay claims, and other alternatives based, for example, on licensed capacity might be preferable to increasing the second layer and adding a third as the proposal is presently framed.

Our organizations have already testified before the other body, Mr. Chairman, in favor of H.R. 51, which would simply double the maximum retrospective premium per incident to $10 million, and that is the approach that we recommend for your consideration.

Turning to the clarifying and perfecting amendments that would provide procedural mechanisms for expeditious action on recommendations from the President as to how best to provide full compensation even if all primary and secondary insurance proceeds are exhausted, we believe that such measures would provide even greater assurance than the present law that Congress means to see that full compensation is provided, and we endorse them in principle.

One final point on S. 1225 that must be addressed is of course that it would make more certain coverage for claims arising out of the activities of the federal government or its contractors in the high level waste repository program or related transportation. We, of course, agree that such coverage is in order, though we think that the proposed backcharge to the Waste Fund is unwarranted. We do not believe it was ever intended, and do not think it appropriate now, to put licensees in the position of insuring the government for its own actions or those of its contractors, when licensees have no means of controlling or supervising those activities.

COMMENTS ON S. 445 (HART)

This bill would destroy the delicate balance of competing objectives and interdependent parts which make Price Anderson function. We are opposed to each of the amendments which would be accomplished if the bill were to be enacted.

Section 2 of S. 445 would eliminate subsection 170 e, thereby eliminating both limitation on liability and the Congressional commitment to provide full compensation to the public in the event funds available under the Price Anderson system were insufficient (See subsections 170 e and o of the existing law). We are opposed to these features of the bill. Limitation on liability is one of several interdependent parts that permit Price Anderson to operate and to achieve economic efficiency through channeling of the financial burden of liability to licensees.

Moreover, repeal of limitation on liability would be unfair to the industry and to those investors who have relied upon this protection in making heavy investments in nuclear power in response to federal policy to encourage those investments. Such a repeal would be unfair also because it would leave in place all of the burdens accepted by industry in return for limitation on liability, including the waivers of defenses, the "omnibus" feature, and the retrospective premium secondary layer of insurance coverage. Finally, we cannot understand why the Congress would want to retreat from its commitment to the public to provide compensation if other resources should prove insufficient.

Section 3 of the bill would have the effect of extending the waivers of defenses to any nuclear incident, which at present are "triggered" by an NRC extraordinary nuclear occurrence determination. This would apply federal strict liability to claims based on normal operating releases and to onsite exposures. An extraordinary nuclear occurrence must involve both a substantial release of radioactive material from its intended place of confinement and some non-trivial offsite consequences. A nuclear incident, on the other hand, can be any factual situation that gives rise to liability and stems from the radioactive, toxic, or other peculiarly hazardous properties of the materials regulated under the Atomic Energy Act.

We are aware of no purpose that would be served by giving onsite workers an additional strict liability claim (i.e., in addition to workers' compensation) as this bill would do nor by applying strict liability as a matter of federal law to claims that allege nothing more than normal operating releases to offsite areas. It is simply illogical to provide for federal safety standards intended to protect the public and at the same time encourage claims that need not even involve a violation of those standards by according them strict liability treatment. Accordingly, we oppose this amendment.

Section 4 of the bill would delete the waiver of statutes of limitations shorter than 20 years, while retaining only the three-year discovery period. We are opposed to this change. A reasonable outside limit is necessary because objective adjudication becomes impractical when claims survive indefinitely. Severe problems of staleness of evidence and the unavailability of witnesses to give contemporary meaning, interpretation and context to such evidence, along with the need for repose and certainty at some point are among the reasons why we have statutues of limitations and should retain a reasonable outside limit.

NRC'S 1983 RECOMMENDATIONS

Rather than cover each of the recommendations in the 1983 NRC report, I will touch on some of the principal ones.

Extension

In Section IV of the December, 1983, NRC Report, the Commission recommends that Price Anderson coverage be extended to cover plants licensed after August 1, 1987, on the same terms that it is retained for those plants that have already received construction permits or operating licenses by operation of the existing law. In other words, the NRC does not favor different insurance or liability arrangements for plants licensed after August 1, 1987, but recommends that existing and future plants be subject to the same system. Viewed separately from the other recommendations, we could support that recommendation, but as I will explain shortly, we are opposed to most of the other recommendations, and especially to the one that would effectively abolish limitation on liability, even for existing licensees.

Limitation on Liability

The Commission further proposed that the present $5 million per licensed reactor per nuclear incident retrospective premium assessment,[4] and the current floating but ascertainable limitation on liability, be replaced with a $10 million annual cap on assessments, but no limitation at all on liability per incident. This has the effect of creating unlimited liability and unlimited assessments subject only to an annual limit on the drain on utility cash flow. We are opposed to this NRC recommendation. As a matter of fairness, the industry, its suppliers and investors have proceeded in reliance upon an ascertainable limitation on liability, and imposing the obligation of being insurers in an unlimited amount on all licensees is simply wrong. While the present retrospective premium assessment can be characterized in insurance parlance as a mechanism to permit adjustments up to an agreed level in underwriting estimates for a covered group to

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4/ The present law also provides for a $10 million per year limitation on assessments against any one licensed reactor irrespective of the number of nuclear incidents for which assessments might be made. In the unlikely event of multiple nuclear incidents, this can have the effect of deferring the full $5 million per nuclear incident per reactor assessment for any of those multiple nuclear incidents to a second or subsequent year.

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arrive at the "true" premium reflecting adverse experience, there are no justifications for imposing unlimited liability on the entire industry if one facility is so unfortunate as to have a major accident.

Even more importantly, given the qualms in the financial and investment communities about nuclear power today, it would introduce an additional premium in the cost of utility capital, both debt and equity, to impose unlimited liability, subject only to an annual cap. The public as a whole is better served by a system that retains the present structure of the Act. If, as we all firmly believe, an accident having major consequences for the offsite public will never occur, then consumers are better served by a system that does not impose artificial costs, provides a high degree of assurance of full public compensation for the least unlikely events, and provides the fallback of federal intervention for a truly major accident just as would be the case for a natural disaster of comparable magnitude.

In summary, we cannot support the 1983 NRC proposal for elimination of a definite limitation on liability.

Extraordinary Nuclear Occurrence

A majority of the NRC in 1983 also recommended retention of the extraordinary nuclear occurrence concept in the present law. The function of that concept is to provide for a threshhold determination by the NRC that a significant release of radioactive material from its intended place of confinement has in fact occurred and that it has had, or will have had, more than trivial offsite consequences. We support this recommendation. The original reason for an appropriate threshhold before invoking strict liability as a matter of federal law remains as valid today as it did in 1966; to minimize frivolous claims based on normal or off-standard operating releases that are still comparable to applicable regulatory limits.

The alternate recommendation favored in December, 1983, by two members of the Commission is along the lines of provisions of S. 445, that is, that the waivers of defenses be extended to any nuclear incident. It is worth repeating the implications of such a fundamental change. A close reading of the present Act's definitions of "extraordinary nuclear occurrence," "nuclear incident," and "public liability" will reveal that the effect of extending the waivers of defenses to any nuclear incident would be to provide federal strict liability as to claims that allege no discernable event, no violation of regulatory limits, no release of radioactive material from its intended place of confinement at the reactor site or in a shipping container, and no offsite consequences. One effect of such a modification would be to provide an additional strict liability remedy to onsite workers who already have a strict liability remedy in worker's compensation. Onsite worker's compensation claims (as opposed to tort claims against persons other than the employer) have always been excluded from Price Anderson. If there are any problems in the administration of the extraordinary nuclear occurrence determination, I am sure that the industry will cooperate with the NRC in fashioning a more workable but still meaningful standard. NRC has embarked on a rulemaking intended to remedy the difficulties experienced in utilizing the present standards.

On April 9, 1985, the NRC published a majority proposal and two alternatives for revising the criteria for determining whether an incident at a nuclear power plant is an "extraordinary nuclear occurrence" ("ENO"). The current criteria for an ENO are codified in 10 C.F.R. §§ 140.84 and 140.85.

As you know, if an event is classified as an ENO, claimants under Price Anderson are relieved of the burden of proving negligence by the defendant and of overcoming such defenses as contributory negligence, governmental immunity, and certain statutes of limitations. See 42 U.S.C. § 2210.n(1). The NRC is proposing changes to the ENO criteria as a result of difficulties reported by its staff in applying the existing criteria after he accident at Three Mile Island (which was determined not to be an ENO).

The statutory definition of an ENO is entirely satisfactory, necessary, and should not be changed. It is as follows:

> The term "extraordinary nuclear occurrence" means any event causing a discharge or disposal of course, special

> nuclear, or byproduct material from its intended place of confinement in amounts offsite, or causing radiation levels offsite, which the Commission determines to be substantial, and which the Commission determines has resulted or probably will result in substantial damages to persons offsite or property offsite.

42 U.S.C. §2014.j. Thus, the Act establishes that a nuclear incident constitutes an ENO if there is "substantial" release of radioactive materials offsite and the releases result in, or will result in "substantial" injuries to persons offsite or damages to property offsite.

The current regulatory criteria for determining whether there have been substantial releases and substantial injuries and/or damages are somewhat complicated, but they set dose tests and property contamination tests to meet the first statutory standard and health effects or property damage tests to meet the second standard. The majority proposal on which NRC has invited comment would mainly lower the dose test for the first standard and lower and simplify the tests for the damage standard. Although a number of improvements may well be possible in both the present tests and the various NRC proposals, these will be handled in the comment process and there is no need for statutory change.

Claims Expense

Finally, the NRC recommends that Congress "clarify" its intent as to the exclusion from government indemnity of the costs of investigating and settling claims and defending suits for damages. The Commission strains the word "clarify" in this context. The 1975 amendments are quite clear. The Department of Justice has opined to the effect that the exclusion applies to indemnity, but does not apply to either primary or secondary financial protection. To the extent that the Commission is in fact recommending that a similar exclusion be applied to primary and secondary insurance coverage, we are strongly opposed. Such an exclusion would be both unfair and unworkable.

The Commission Staff or its consultants writing on this matter in the subject report appended to the main report emphasize that "conventional" liability policies include no limitation on the insurer's obligation to defend; defense and claim costs are not counted toward policy limits. What the authors overlook is that such "conventional" policies are not written on an "omnibus" basis. For the insurers to defend a named insured without explicit limit is one thing; to seek to oblige them to defend any potential defendant (and in an extraordinary nuclear occurrence situation, it could be hundreds or even thousands of potential defendants) is manifestly unjust and economically unrealistic. As a practical matter, if such costs and expenses were excluded, the insurers would have no alternative but to reduce available policy limits to allow for their best estimate of probable maximum claims expenses and defense costs. In any event, we understand that insurers are moving in the direction of counting such costs toward conventional policy limits.

Conclusion

In closing, I would simply emphasize that S. 445 would effectively destroy the intricate, carefully balanced, workable and societally desirable system of public compensation and economic efficiency achieved in the existing Price Anderson law. The 1983 NRC proposal for assessments for an indefinite period would make licensees insurers without limit and without just compensation. With the exception of the extension of coverage to include future plants, which we support, and retention of the statutory ENO concept, with which we agree, the other NRC recommendations have not been shown either necessary or desirable. The policy of Price Anderson has always been and should continue to be to assure speedy satisfaction of legitimate claims. Proposals to remove the limit on liability or extend the waiver of defenses to normal operations are really efforts to penalize the industry for carrying out the task Congress asked it to undertake, and do nothing to further the goal of compensation. S. 1225, on the other hand, is a responsible proposal which has some good features, but we submit that an approach along the lines of H.R. 51 is preferable and should be enacted.

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The **Chairman**. Thank you.

Mr. Johnson.

STATEMENT OF M.G. JOHNSON, ON BEHALF OF THE COORDINATING COMMITTEE OF PRICE-ANDERSON CONTRACTORS POLICY ISSUES STUDY, ACCOMPANIED BY OMER F. BROWN, COUNSEL FOR THE STUDY

Mr. **Johnson**. Thank you, Mr. Chairman.

My name is M.G. Johnson. I am chairman of the Coordinating Committee of the Price-Anderson Contractors' Policy Studies of the American Nuclear Energy Council. Appearing with me today is Omer Brown, counsel for the Coordinating Committee.

I am going to be concentrating entirely on the subject of the DOE contractor indemnity, the 170(d) portion of the current act. Nothing that I have is directly pertinent to the licensee side, although in essence I agree with Mr. Griffith's comments on that subject.

Instead of summarizing my paper, I'd like to perhaps put some emphasis on a handful of points that I think perhaps are important but have not been given the emphasis they deserve.

First, as far as the Government contractor is concerned, the operation of nuclear facilities represents an essential Government function, and is critical to national defense. I think it's unquestioned that the U.S. Government has a moral obligation to compensate any victims of any accidents growing out of its Government activities.

Thirdly, suppliers and contractors to the Government are not in a position to protect themselves against the nuclear risk for one of two different reasons. One, the Government makes a practice of refusing to provide liability insurance, or reimburse for liability insurance for those contractors. Secondly, as a practical matter, such insurance is not available for much of the Government contract work. That is, the private pools would not insure for the defense nuclear activities. Therefore, without Price-Anderson protection the contractor would be left without any protection. The DOE, as they testified earlier today, would undoubtedly have great difficulty in getting contractors.

Another thing that needs to be considered is the nature of the injuries that are likely to appear from nuclear incidents. Unlike automobile accidents where the injuries are apparent almost immediately, typically in the case of nuclear, injuries, radiation injuries, many years will transpire between the occasion of the nuclear incident and the initiation of the litigation seeking recovery for claimed injuries.

As a practical matter, without Price-Anderson the Government contractor is essentially helpless to protect himself against those kinds of claims. The alleged incident may itself be something that occurs long after the contractor has left the site of the work. It may be then another substantial period of time before the injuries become apparent and the suits are filed. At this point, the contractor is simply helpless. He has no way to go back and make any kind of investigation to establish any kind of a defense against anyone, be it the injured third party or be it the Government trying to go back against the contractor to recover, as some have suggested here today should be allowed.

As a practical matter, without the Price-Anderson mechanism where the contractor does not have to worry about that nuclear liability, there is no way the Government is going to be able to get the services of the hundreds and thousands of contractors and suppliers now providing services to the nuclear governmental industry.

Many suppliers have no way of knowing that the product is going into a governmental facility. Without something like Price-Anderson, they are exposed to nuclear liability which is uninsurable in the normal course of events, and may, if their product is ultimately determined to have had something to do with the cause of a nuclear incident, be found liable without any protection.

Much has been made today by some individuals as to the lack of accountability and the effect on quality and safety if the contractor is not held responsible for his nuclear liability. That argument contains some emotional value; I think it cannot stand the light of day, however, of close observation.

If you go back over the roughly 30 years of history of nuclear activities in this country and review the total amount of judgments, of awards, of settlements that have been made for nuclear-related injuries over those 30 years, compare them with the total losses of let's say automobile accidents—one small segment of the nonnuclear liability potential—of automobile accidents in a single week or month, the greatest threat to this contractor and what is going to keep that contractor or supplier acting in prudent fashion, if anything, is not the threat of the nuclear liability which while large is infinitesimally small compared to the threat of conventional liability, if that contractor or manufacturer is careless in his work, in the conduct of his work, he is exposing himself to far greater liability of the conventional type than he is of the nuclear type.

Now it's true he can get insurance to cover some aspect of that, unlike the story on the nuclear side, but all that does is point up what we're talking about. When we're talking about the Price-Anderson Act, it's got to be looked on as serving two purposes. One is victim compensation; but second, in effect, it is an insurance policy which should be looked up just as any other insurance policy.

Now no one advocates that an insurance company, an automobile liability insurance company, who after an accident pays out the claim should be able to come back against its insured and recover. Even if that insured is negligent, even if that insured is reckless, is grossly negligent, that's not the way the world works. And yet, we would have people here who would say, no, we should permit recovery against that contractor, against that party whose negligence or carelessness was responsible for the accident. Why is this any different than the basic insurance situation where I am sure no one in this room would get behind the wheel of his automobile again if he or she was aware that his insurance carrier could after an accident for which he or she was responsible through negligence, carelessness, wrecklessness, whatever, paid the victim and then came back against the insured and recovered it from the insured. That is just simply totally out of sync with the modern world.

Because of the shortness of time, I don't want to go into any more detail on these points, except one point which was touched upon earlier today. That has to do with the mandatory—or rather the current permissive nature of the 170(d) indemnity. Unlike the commercial licensee indemnity in 170(c) of Price-Anderson which is mandatory as required, 170(d) is permissive.

As a result, the Department of Energy will grant the indemnity only after it has made a finding of the possibility of a substantial nuclear incident. Now for political reasons, the Department of Energy is somewhat reluctant to go out and publicly admit there's a possibility of a substantial nuclear incident, particularly because that in their regulations is essentially defined as one which could do $60 million of damage or more.

As a result, in some of these government programs contractors have been unable to get the Government indemnity under section 170(d). Accordingly, we feel that victims, or potential victims, are entitled to that coverage; and we think the act should provide for the indemnity to be automatic and not discretionary with the Department of Energy whenever any nuclear risk exists.

Finally, we do support the full application of the Price-Anderson Act, including the extraordinary nuclear occurrence concept, to the nuclear high-level waste program. I thank you.

[The prepared statement of Mr. Johnson follows:]

Statement of M.G. Johnson
on Behalf of the Coordinating Committee of
Price-Anderson Contractors Policy Issues Study

Before the
Subcommittee on Energy Research and Development
Energy and Natural Resources Committee
United States Senate

June 25, 1985

Mr. Chairman and Members of the Committee:

My name is M.G. Johnson. I am Special Counsel at Bechtel in San Francisco and Chairman of the Coordinating Committee of the Price-Anderson Contractors Policy Issues Study.[1] I am accompanied by Omer F. Brown, counsel for the Study.

We appreciate this opportunity to appear before your Committee to discuss nuclear hazards indemnity coverage for DOE contractors under Subsection 170d of the Price-Anderson Act. We are glad you are holding this first Senate hearing of the 99th

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[1] The Price-Anderson Contractors Policy Issues Study is an independent activity of the American Nuclear Energy Counsel sponsored by the Babcock & Wilcox Company; Battelle Memorial Institute; Bechtel National, Inc.; Fluor Corporation; General Electric Company; Stone & Webster Engineering Corporation; UNC Resources, Inc.; and Westinghouse Electric Corporation. Each of these entities now has one or more nuclear hazards indemnity agreements with the U.S. Department of Energy (DOE) under Section 170d of the Price-Anderson Act.

Congress well in advance of the Act's expiration in 1987.

Subsection 170d of the Price-Anderson Act authorizes DOE until 1987 to enter into indemnity agreements with certain of its contractors for protection of the public in the unlikely event of a nuclear incident. Even though more attention historically has been focused on liability coverage for licensed facilities, such as nuclear power plants, Congress also should be concerned with public protection for risks arising out of DOE activities. In fact, with no new power plants now being ordered, the present expiration date may be of more immediate concern with respect to DOE contractor coverage, because it is clear that DOE will be entering into or renewing contracts for various nuclear activities, including those under the Nuclear Waste Policy Act, after August 1, 1987.

We submit that Price-Anderson coverage for DOE contractors should be extended as it has been twice before. In fact, we believe it should be mandatory for DOE to provide such coverage for contractors and suppliers in connection with government nuclear activities which could result in injury or damage. It then could be applied in more situations, such as waste management facilities, in the interest of maximum public protection.

We agree with the conclusion expressed in the August 1983 DOE Report to Congress that the Price-Anderson indemnity system should be continued to ensure furtherance of DOE's statutory missions in research and development, production, defense and other nuclear fields, and protection of the public. Indeed, as DOE indicated, there would be strong reluctance on the part of existing and potential contractors to do nuclear business with the Department if DOE's authority to enter into Price-Anderson indemnity agreements were discontinued. The strong reluctance would apply especially to suppliers whose nuclear activities are only a small percentage of their overall businesses. This would lessen competition and otherwise increase costs to the Government. The strong reluctance also would extend down tier lines to subcontractors and equipment suppliers, including many small businesses throughout the country, who might be liable for a serious accident but not have the financial resources to cover that liability or the defense costs associated with such litigation.

While the the Federal Government's own nuclear activities (which usually are carried out by contractors) have had an extraordinary safety record, the possibility of a serious accident resulting in damages to the public unfortunately cannot be eliminated totally. Price-Anderson provides an assured and exemplary system of protection for the public in case that unlikely event ever happens.

Indemnification of government contractors for possible nuclear losses has been provided since the days of the Manhattan Engineer District of the War Department in the early 1940's. Subsection 170d by its terms merely supplements other authority DOE has to indemnify its own contractors. Price-Anderson, however, rounds out that authority so as to better assure the protection of the public at large. Contractor coverage prior to the Price-Anderson Act often was inconsistent, subject to individual contract idiosyncracies, inapplicable to subcontractors, and subject to the availability of appropriated funds. Subsection 170d was carefully designed to correct many of these deficiencies and to provide a uniform system of public protection. We agree with DOE's conclusion that Price-Anderson should be extended.

We have a few comments on the two Senate bills now being considered to amend the Price-Anderson Act as a whole: If S. 445 were adopted, it would have an adverse impact on the DOE contractor program. The bill would eliminate the limitation-on-liability provision that is a fundamental feature of the Price-Anderson system. We believe that, instead of eliminating the limitation entirely as S. 445 would do, Congress should consider increasing the $500 million indemnity and limitation for DOE contractors to some appropriate figure. We think the number in S. 1225 may be too high. We are not prepared to suggest another number, but our tentative conclusion is that it need not necessarily be the same for government contractors as for power plant licensees, since different public policy considerations may come into play in the assumption of financial responsibility for Government activities. Nevertheless, we believe careful consideration should be given to developing an increased figure that would protect all parties by providing a readily available source of funds without eliminating the Congressional pledge embodied in the present Act that, in the event of an incident involving damages in excess of the statutory limit, Congress will take whatever action is deemed necessary and appropriate to protect the public. We agree the language in S. 1225 would reinforce this pledge.

S. 1225 would extend the Price-Anderson Act for twenty-five years. We believe consideration should be given to making the contractor coverage provision permanent, subject to periodic review by Congress.

S. 1225 would "clarify" the applicability of the Price-Anderson Act to activities under the Nuclear Waste Policy Act. We believe the Price-Anderson Act in its present form can be applied to DOE waste management activities, as it is in the case of the Waste Isolation Pilot Plant. However, we certainly would not oppose a more explicit statement by Congress that the Price-Anderson Act applies to DOE waste management activities. And, we endorse the provision in Section 4 of S. 1225 that would make it mandatory for DOE to indemnify its contractors involved in nuclear waste management activities. In fact, as previously indicated, we believe it should be mandatory for DOE to extend such coverage to all of its nuclear contractors.

S. 445 would eliminate the "extraordinary nuclear occurrence" feature added to the Act in 1966 and require licensees and contractors to agree in advance to waive certain ordinarily available legal defenses for all "nuclear incidents". Congress considered and rejected this idea in 1966 on the ground that it would encourage nuisance suits. We believe that the 1966 reasoning was sound and still applies today. The purpose of the "extraordinary nuclear occurrence" provision was to give added protection to the public in the event of a significant accident by requiring the waiver of certain ordinarily available tort law defenses. That statutory protection now exists and should not be changed. If the threshold for determining whether a particular release constitutes an "extraordinary nuclear occurrence" is considered to be too high, it can be revised administratively by DOE or NRC. A statutory amendment that would be advisable is one to extend the "extraordinary nuclear occurrence" provision to nuclear waste management facilities as suggested by DOE and the State of New Mexico. Adoption of Section 7 of S. 1225 would accomplish this.

In conclusion, after nearly thirty years of Price-Anderson Act indemnification, private industry has assumed, as Congress intended, a larger role in assisting the Federal Government in carrying out its own nuclear activities without any significant damage or injury to the public. In other words, Price-Anderson contractor indemnification is a system that has worked well. It should be extended again in substantially its existing form.

I would be happy to answer any questions you might have.

Thank you again for this opportunity to appear before your Committee.

The **CHAIRMAN**. Thank you, very much. I wish to thank each of you, in turn.

Necessarily, the questioning period will be relatively short because I'm already late for my next appointment, but I will submit a number of questions for the record.

I wanted to explore just a couple of things before going. Ms. Kehoe, as I understand your position—whether it's your organizational position or your personal position—you've changed from where you were a year ago. A year ago you were in favor of repealing Price-Anderson.

Ms. **KEHOE**. No, that's not correct. In 1980 I authored a publication that was published by my organization which did favor repealing Price-Anderson. In testimony before the House Interior Committee last year, we testified in favor of the Siberling-Hart, the H.R. 445, S. 445 proposal, which does not repeal Price-Anderson.

The **CHAIRMAN**. Why did you change your mind?

Ms. **KEHOE**. Because we've managed to be flexible through this process, and I do think that there are likely to be some benefits that the public could derive from a Price-Anderson if that Price-Anderson is significantly revised.

The **CHAIRMAN**. Can I make a kind of a summary from what I understand your position to be with respect to legislation? One, you support H.R. 445 and S. 445, but I assume that you make a couple of basic assumptions. One, that private-sector insurance is available and relatively unlimited in its coverage?

Ms. **KEHOE**. Not relatively unlimited, but it's available. Go ahead.

The **CHAIRMAN**. All right, what are the limits on it?

Ms. **KEHOE**. Well, I believe, Mr. Chairman, that there are definite constraints on the insurance industry, and that has been clear. But we do believe that what the Price-Anderson Act does is it unnecessarily limits the amount the private sector may be able to provide.

The **CHAIRMAN**. You think the private sector can come up more, and you're not sure how much more?

Ms. **KEHOE**. Exactly.

The **CHAIRMAN**. And second, you assume that a given utility operating a powerplant would be able to pay claims no matter what the amount of those claims might be; and the combination of insurance, whatever that limit might be, and the financial capacity of an individual utility in the aggregate would be guaranteed enough for claimants against any possible accident.

Ms. **KEHOE**. In the aggregate, I mean I suppose that depends on how many years you stretch it out. I think that what you are referring to—are you referring to the NRC's proposal, or H.R. 445 and S. 445?

The **CHAIRMAN**. S. 445.

Ms. **KEHOE**. Let me explain why we think the public would be fairly well protected under S. 445.

The **CHAIRMAN**. Well, let me just ask you this question, because I don't have unlimited time.

Ms. **KEHOE**. Sure.

The **CHAIRMAN**. Do you believe that the aggregate amount of money that a utility could get by private insurance and their own financial resources are sufficient to pay all claims for any conceivable accident?

Ms. **Kehoe**. No.

The **Chairman**. Then H.R. 445 and S. 445 do not give assured compensation? Is that correct?

Ms. **Kehoe**. That's correct. That's correct. If you read our statement where we discuss that——

The **Chairman**. I've read it.

Ms. **Kehoe**. What we support is the fundamental principle behind 445. Those two bills were introduced not as comprehensive final legislation ready to be enacted in law.

The **Chairman**. But you support them.

Ms. **Kehoe**. We do support them. We think there are fundamental principles there that need to be supported.

The **Chairman**. As I understand from your description of S. 1225, you support some of the principles involved, but you don't support the bill because it doesn't have assured recovery for all victims?

Ms. **Kehoe**. That's correct.

The **Chairman**. And yet the bill that you do support doesn't have assured recovery for all victims.

Ms. **Kehoe**. That's correct. The bill that we support does not state at the outset that it is a comprehensive piece of legislation which will assure full compensation to all victims of any nuclear accident.

The **Chairman**. Which I understand to be your premise for the support, or lack of support, for any legislation.

Ms. **Kehoe**. State the question again? I'm sorry?

The **Chairman**. Well, I understood that assured compensation was the touchstone for your approval or disapproval of a bill.

Ms. **Kehoe**. We see those as the two fundamental goals. The other goal, which is of perhaps equal importance, is the concept of accountability, industry accountability. And that's what you accomplish—what we see, Mr. Chairman——

The **Chairman**. So you sacrifice your assured compensation in order to achieve accountability?

Ms. **Kehoe**. That's correct. We sacrifice that because we believe in supporting that bill we're making a statement that industry accountability is a fundamental goal. Also in supporting that bill we say that compensation is also a fundamental goal, which your bill, we believe, does not adequately accomplish either.

The **Chairman**. Either?

Ms. **Kehoe**. Either.

The **Chairman**. And S. 445 does so only within the limits of available insurance and the financial accountability of the individual utility.

Ms. **Kehoe**. That's correct. And the suppliers, and the vendors.

The **Chairman**. Mr. Faden, as I understand what you support now is an open-ended liability question. And as I understand, 4 years ago you vehemently opposed any notion of open-ended proposals when it came to the cleanup of TMI. Is there a reason why you're in favor of open-ended proposals now and were opposed to it then?

Mr. **Faden**. I'm not sure that our positions are quite diametrically so opposite, Mr. Chairman. In the TMI case we opposed legislation that came in after the fact and sought to take the load off the

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particular utility that caused the accident for its cleanup of its own property. Here we're talking about compensation for third parties.

The Chairman. So you wouldn't object to unlimited liability or open-ended liability on an individual utility, but you do oppose it with respect to the collective liability of the group of utilities?

Mr. Faden. If you're asking, do we support or oppose the original NRC plan, we think that with modifications the original NRC plan could be good public policy.

The Chairman. But that's on an individual utility, not on a group of utilities.

Mr. Faden. Well, we think we have—again, as Ms. Kehoe said, we have a flexible position. There are more ways than one to skin this particular cat, and one of them might well be a modification of the NRC plan which makes the individual utilities more accountable by somehow, for instance, adopting a large deductible so that the utility that causes the accident, or its suppliers or vendors, whoever were legally responsible, would come up with the first large installment of compensation funds; but that you would have as a backup a scheme such as the NRC proposed.

The Chairman. Well, I can only read your testimony in 1981 which seems to me, at least, to be in direct opposition to the testimony you're making today, but perhaps I don't read it correctly.

Mr. Schmalz, you skipped over one point I would like to return to.

Mr. Schmalz. Yes, sir.

The Chairman. That's the danger of asking witnesses to summarize, because there are some intriguing portions of testimony that sometimes are not delivered verbatim, as a result.

On page 10 of your statement, in referring to the TMI accident and the postaccident claims and the consolidation of those claims in court, you point out that the court has ruled that it had no jurisdiction. And you have indicated you would like to propose legislation that would authorize consolidation of suits in such a case.

I wanted to return to that for a moment, because I don't think there's any provision in any of the bills that touches on that issue. Am I correct?

Mr. Schmalz. I don't believe so, although I think there was some hint of it, or a suggestion of it in the Department of Energy testimony this morning.

The Chairman. Well, I think it may be a valid consideration, and I would invite other witnesses who may look at that question to submit their views with respect to the possibility of consolidation of claims as a vehicle to getting prompt, efficient adjudication of the several claims that are involved. I don't think anybody that's testified here today has represented the Bar Association, and those legal practitioners who find great merit in proliferating claims.

I don't think, either, that the legal profession did itself any good in the public eye in their rush after the ambulance in the incident in India, and unfortunately there's perhaps a great tolerance on the part of the bar and the legal profession today for what at other times might have been called champerty or veritatry, or more commonly known as ambulance chasing.

I have no further questions at this time. I will submit some for the record, and for your response for the record. I appreciate your testimony this morning. Thank you very much.

The subcommittee stands adjourned.

[Whereupon, at 1:23 p.m., the subcommittee adjourned.]

APPENDIX

RESPONSES TO ADDITIONAL COMMITTEE QUESTIONS

Department of Energy
Washington, DC 20585

July 24, 1985

Honorable Pete V. Domenici
Chairman, Subcommittee on Energy
  Research and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On June 25, 1985, Acting Assistant Secretary James Vaughan appeared before the Energy and Natural Resources Subcommittee on Energy Research and Development to discuss the issues under consideration for renewal of the Price-Anderson Act.

Following that hearing, you submitted written questions for our response to supplement the record. Enclosed for your information are the answers to those questions, which also have been sent directly to the Committee staff.

If you have any questions, please call Hank Edler or Cathy Hamilton of my staff on 252-4277. They will be happy to assist you.

Sincerely,

Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

POST-HEARING QUESTIONS AND ANSWERS
RELATING TO THE
JUNE 25, 1985 HEARING ON
EXTENDING THE PRICE-ANDERSON ACT OF 1957

BEFORE THE

SENATE COMMITTEE ON ENERGY AND NATURAL RESOURCES

SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT

WITNESS: JAMES W. VAUGHAN, JR.

ACTING ASSISTANT SECRETARY FOR NUCLEAR ENERGY

U.S. DEPARTMENT OF ENERGY

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 1(a): Why doesn't DOE normally require its contractors to purchase nuclear liability insurance from the private insurance pools? Wouldn't this requirement help expand the capacity of the nuclear insurance pools?

Answer: DOE contractors engaged in nuclear activities are usually paid on a cost-reimbursable basis. Therefore, if they were to purchase insurance, they would pass the cost on to the Government. This would be contrary to the Government policy of self-insurance. Since the Government has sufficient financial resources to pay large liability claims, it is more economical not to pay insurance premiums.

If DOE were to require its contractors to purchase liability insurance from the private insurance pools, it is unlikely that this would have a meaningful impact on the private market's ability to generate additional capacity. Although the Department has done so informally, Congress may wish to address this question to representatives from the insurance industry to obtain their point of view.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 1(b): Doesn't DOE require its contractors to purchase other kinds of insurance? And aren't the costs of these insurance policies included in the cost-plus contracts, so that the insurance costs are ultimately passed back to the government? So why is private nuclear insurance an exception to this standard practice?

Answer: Casualty insurance coverage (Worker's Compensation and General Liability) for DOE's Management and Operating contractors is provided by insurance companies through special arrangements under which they provide claims-handling services without having any of their assets at risk. The actual cost of claims, plus fees and taxes, are paid by DOE through the cost reimbursement contract; thus, all insurance costs are "passed back" to the Government. Private nuclear insurance is not an exception to this standard practice, but is handled consistent with this practice. The nuclear insurance pools provide only claims-handling services for DOE in the event of a nuclear incident. This program has proven itself to be in the best interests of the Department from a cost aspect.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 2: Could you explain to us the difference between the pre- and post-1957 contractor indemnity provisions? Are contractors now, or were they ever in the past, exposed to potential public liability lawsuits for gross negligence or willful misconduct? Are there any circumstances (nuclear incidents or otherwise) where a DOE contractor can be sued for gross negligence or willful misconduct?

Answer: Prior to passage of the Price-Anderson Act in 1957, the public was not afforded a special legal avenue for compensation for loss or damage due to nuclear incidents. However, during the Manhattan project* the industrial and other organizations that were recruited to construct and operate the Government's nuclear facilities sought contractual protection against the risks involved in such activities and, therefore, indemnity provisions were included in the contracts for construction and operation of these facilities. These organizations included such contractors as E.I. du Pont de Nemours, the University of Chicago, and the University of California. When the operations of the Manhattan Engineer District were transferred to the Atomic Energy Commission in January 1947, the AEC assumed responsibility under many contracts containing such indemnity provisions.

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*The Manhattan Engineer District, who had responsibility for the Manhattan project, was created in the summer of 1942.

Answer 2
(continued): Since insurance of the type normally available to industrial enterprises was not obtainable against the risks involved in the atomic energy activities, and considering the fundamental policy of Government self-insurance, the AEC concluded that it was necessary and appropriate to continue to indemnify the original operating contractors and to extend similar indemnification to new contractors engaged in the operation of AEC facilities involving nuclear hazards.

In general, the indemnity agreements negotiated by the AEC followed the broad lines of the earlier indemnity agreements. In most cases, they did not extend to contractor losses, expenses, or damages resulting from the willful misconduct or bad faith of a corporate officer or general manager, and were subject to the availability of appropriations. There were some individual variations, depending upon applicable law, policy, and particular negotiations. In some instances, for example, the exception to coverage was expressed in terms of "bad faith, willful misconduct or gross negligence." However, we do not know of any incident where willful misconduct or gross negligence of a contractor was actually at issue.

Answer 2
(continued): Since 1957 and the passage of the Price-Anderson Act, the contract indemnity system of the Price-Anderson Act has been in use to protect the contractor and others from the risk of liability for a nuclear incident. Price-Anderson permits DOE to indemnify its contractors engaged in activities involving the risk of a substantial nuclear incident, without a limitation relating to availability of funds and without reference to any exception based upon misconduct, bad faith, or negligence of the contractor or subcontractor's representatives. The indemnity also covers any person who may be liable for a nuclear incident arising out of or in connection with the contract activity ("umbrella coverage"). These features of Price-Anderson were intended to assure financial protection of the public in the case of a nuclear incident whether or not it resulted from the gross negligence or willful misconduct of a contractor or from an act of a person with whom the contractor or the Government had no contractual relationship.

In this regard, since the enactment of Price-Anderson in 1957, our nuclear contractors have been protected by indemnification agreements between the government and the contractor from the possibility of having to pay third party liability claims for a nuclear incident arising out of

Answer 2 (continued): contract activity even if the contract is deemed to have been breached. Thus, in connection with nuclear incidents, such contractors are not exposed to potential DOE lawsuits for gross negligence, willful misconduct, or failure to fulfill terms of the contract. This assures that the Price-Anderson system of indemnifying contractors, while financially protecting the public, will not be subject to possible delays and uncertainties associated with the resolution of often difficult legal determinations. Finally, to our knowledge, there has never been an instance where any question has arisen regarding willful misconduct or gross negligence on the part of a contractor in connection with a nuclear incident.

With regard to claims for incidents that are not nuclear incidents under Price-Anderson, in the event of litigation arising out of willful misconduct or lack of good faith on the part of any of the contractors' directors or corporate officers, DOE will not reimburse the contractor for litigation expenses and losses. Therefore, the contractor would remain legally and financially responsible for such actions.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 3: What measures have been established to promote high standards of safety at DOE facilities? Is a contractor held accountable in any way for violations of safety standards (nuclear or otherwise)? How so?

Answer: Environment, safety, and health (ES&H)-related functions are an integral part of the Department's programs, most of which are executed at Government-owned, contractor-operated facilities. The contracts for these operations contain specified ES&H-related clauses which require the operating contractor to take all reasonable precautions in the performance of work to protect the employees and the public and to comply with all applicable ES&H regulations and requirements of DOE. The ES&H clauses also contain stop-work provisions. In addition, for cost-plus-award-fee contracts, a portion of the award fee is determined by ES&H performance.

An important aspect of the Department's ES&H program is the tiered system of checks and balances involving the contractor, the DOE field office, and Headquarters organizations. Responsibility for ES&H policy is assigned to an independent Headquarters organization at the Assistant Secretary level. Reviews to determine compliance with policy are carried out by independent offices established at the contractor, DOE field office, and Headquarters level. On the basis of extensive

Answer 3
(continued): experience, the environment, safety, and health record and performance have demonstrated the effectiveness the Department's safety philosophy and approach. Safety performance (e.g., injury, illness, property damage, radiation exposure statistics) in all areas has been excellent.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 4:	What has been the claims experience to date with DOE for nuclear-related incidents? How much money has been paid out to date for these claims? What was the nature of these claims? Did any of these claims involve offsite damage or injury to the public?
Answer:	Only one significant incident under the Price-Anderson contract indemnity system has been recorded. In 1961, a nuclear incident involving an Army reactor occurred at a contract location in Idaho. Three U.S. servicemen lost their lives. Settlements were made in the total amount of $266,000 under the indemnity provision.

In 1966, a subcontractor employee of a firm contracting with the AEC spilled some depleted uranium on her hand while opening a vial of the material and claimed that she incurred damages from such incident. In 1970, the Atomic Energy Commission approved settlement of the claim under the indemnity provision of the contract in the amount of $5,000.

These two settlements made under the indemnity provision of the Price-Anderson Act total $271,000.

Neither of these two claims involved offsite damage or injury to the public.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 5(a): If a severe nuclear incident were to occur at a DOE facility, how much money do you think would be required--and could actually be spent--immediately following such an incident? Would a figure in the range of $2 to $2.5 billion be adequate?

Answer: Let me preface our response to this question by pointing out that DOE carries out very stringent environmental programs designed to ensure the safe operation of its nuclear facilities. Although the Department's contractors have compiled an excellent safety and health record over the last three decades, the nature of a high consequence nuclear accident--despite its low probability--is such that some form of financial protection is necessary for the contractors to continue doing business with the Department.

Establishing the amount of money that would be necessary to satisfy claims immediately after a nuclear incident would require developing a complex model for each of the DOE nuclear facilities. Each model would then have to be used to estimate the damages and the claims resulting from a specific incident and each model would have to be used to analyze each type of incident. Estimating damages through modeling would would require making a large number of assumptions about the type of incident which could occur and the complex chain of events that could follow. It would also require making assumptions about such variables

Answer 5(a)
(continued): as atmospheric conditions, population density, operator response, emergency plans in place, and population response. Hundreds of scenarios would have to be developed and analyzed to establish a range for damages resulting from a nuclear incident. This approach would then have to be repeated for each nuclear facility.

Such an exercise would only lead to a very wide range of values for the damages resulting from a nuclear incident which would be of very little value in helping to establish a liability limit. A process that satisfies claims by making a large fund available to satisfy the immediate needs of claimants is a reasonable approach. A fund containing $1 billion to $2.5 billion may be sufficiently large.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 5(b): What is your opinion of the provisions in S. 1225 for further Congressional review and action on additional compensation plans in the event that the immediately-available funds are exhausted?

Answer: The Department does not object to the provisions in S. 1225 for Congressional review and action on additional compensation plans in the event that the immediately available funds are exhausted, provided the President is not required to submit legislation in the event he determines no additional compensation is warranted.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 6: In the case of acts of theft or sabotage not traceable to a contractual activity, how would victims be compensated under present law? (Disaster Relief Fund? FEMA? etc.)

Answer: In the case of acts of theft or sabotage not traceable to either a contractural activity or licensee, the potential consequences of such actions are not specifically covered by existing insurance or legislation. It is through congressional review and action that the Federal Government has the ability to provide payment to the victims of such actions.

Any questions with respect to the Disaster Relief Fund should be addressed to the Federal Emergency Management Agency.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 7: As it now stands, does Price-Anderson indemnification apply to the activities at DOE's Waste Isolation Pilot Project (WIPP)? Do you think that the clarifications in S. 1225 -- especially the specific identification of DOE activities related to the transportation, storage, and disposal of high-level and transuranic wastes -- are preferable to the vague provisions under the current law?

Answer: DOE has determined that the contractor responsible for the management of the Waste Isolation Pilot Project (WIPP), its subcontractors, and any other person who may be liable for a nuclear incident relating to WIPP, will be indemnified through the Department's prime contract under the Price-Anderson Act (Section 170(d) of the Atomic Energy Act of 1954, as amended).

Present Price-Anderson coverage applies to the Department's nuclear waste activities. Section 170(d) of the Atomic Energy Act of 1954, as amended, authorizes indemnification not only for nuclear reactors but for "other activities under contract for the benefit of the United States." Although the present language already permits indemnification coverage for nuclear waste operations, we are aware that some would be more comfortable if the statute were rewritten to provide for explicit coverage relating to the transportation, storage, and disposal of high-level or transuranic wastes. The Department supports such changes in the language of the Act.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 8: It seems to me that DOE's current criteria for making a determination of whether an accident was an Extraordinary Nuclear Occurrence (ENO) are not broad enough to include accidents that might arise from nuclear waste disposal activities. Particularly disconcerting to me is the section of the regulation (10 CFR Part 840) which talks about "release of radioactive material from a production or utilization facility." I have looked up the definitions of "production" and "utilization" facilities in the Atomic Energy Act, and neither definition seems to fit nuclear waste disposal.

Does DOE have any plans to revise its criteria for making an ENO determination, in light of the apparent inapplicability of the current criteria to DOE's waste activities?

Answer: The Department's criteria for determining when there has been an ENO are found in 10 CFR Part 840. Section 840.4 provides that Criterion I will be met when, as a result of an event comprised of one or more related happenings, radioactive material is released from its intended place of confinement or radiation levels occur offsite and either of two findings are made. The first finding relates to doses or projected doses of radiation to persons offsite and does not refer to a production or utilization facility. Therefore, the first criterion could be met based on projected doses alone. The second finding relates to surface contamination resulting from release of radioactive material from a production or utilization facility or device or in the course of transportation. This second finding uses the terms "production or utilization facility" or "device" or "in the

Answer 8 (continued): course of transportation" because Section 170(n) authorizes the waiver of defenses to apply to an ENO occurring in those three situations. If Section 170(n) is amended, as we have recommended, to include nuclear waste activities, the ENO criteria (Part 840) would be amended to add the appropriate phrase to include such activities. A change to dose criteria would not be necessary.

In April 1985, the NRC published a proposed rule giving three options for amending their ENO criteria in order "to simplify the administrative criteria" and "to avoid the problems encountered by the Commission in applying the existing criteria to the accident at the Three Mile Island nuclear plant (TMI)." DOE is reviewing the NRC proposals with regard to its effect on NRC licensed powerplants. We are also reviewing the criteria from the standpoint of how similar criteria would affect DOE nuclear facilities, including waste facilities. Comments are due to the NRC on August 7, 1985, and we intend to complete our review before that time.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 9: Are you familiar with Senator Grassley's bill, S. 1254, which would provide for unlimited, strict liability and government indemnification for all government contracts involving hazardous activities? Are you aware of the fact that the Justice Department opposes this bill? Do you know why the Justice Department opposes this bill?

Answer: Section 5(f) of S. 1254 specifically excludes risks that could be covered under Price-Anderson. It authorizes the U.S. Government to indemnify contractors who are engaged in unusually hazardous activities.

On June 11, 1985, the Acting Assistant Attorney General of the Civil Division testified that the Department of Justice did not support S. 1254 because government indemnification will pass tort judgments from the contractor to the taxpayer and may well cause the size of the judgments to increase because the seemingly unlimited resources of the government will be available. The Acting Assistant Attorney General balanced this position by recognizing that existing law provides for indemnification with limited liability in appropriate, carefully considered situations such as under the Price-Anderson Act.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 10: Are you familiar with other federal statutes, similar to Price-Anderson, that establish government indemnity and specific limitations to liability for other, non-nuclear activities? Could you give us some example of these statutes, and the liability limits they impose?

Answer: With regard to Federal statutes similar to Price-Anderson that establish government indemnity for non-nuclear activities, the National Aeronautics and Space Administration has authority to indemnify the user of a space vehicle against third party claims resulting from activities carried out in connection with the launch, operations or recovery of the space vehicle (see 42 USC 2458(b)). Also, 50 USC 1431 authorizes U.S. agencies engaged in national defense activities to indemnify certain contractors, if the President or his designee deems such action would facilitate the national defense. Further research may reveal other similar statutes.

The attachment contains a listing of statutes that limit liability for non-nuclear activities compiled by the Congressional Research Service in 1984.

Congressional Research Service
The Library of Congress

Washington, D.C. 20540

March 19, 1984

TO : Hon. Edward J. Markey
Attn: Richard Udell

FROM : American Law Division

SUBJECT : Industry-Protective Limitations on Liability in Federal Statutes and Treaties

This memorandum responds to your request for a listing of liability limitations in federal law, with a comparison to the liability limitation in the Price-Anderson Act. That Act, 42 U.S.C. § 2210, sets a floating liability ceiling as to parties responsible for injury to the public in a nuclear incident.

Research was confined to those liability limitations offering some parallel to that in the Price-Anderson Act, namely, limitations on the dollar liability of a commercial entity for injury caused by that entity. This rule leads to our exclusion of the following types of provisions, despite their arguable status as "liability limitations":

ceilings on fines/penalties
limits on available government insurance/loan guarantees
limits on government liability per agreement with private party
limits on shareholder liability
limits on liability of credit card holders for unauthorized use
bars on bringing certain types of actions against specified parties

33 U.S.C. § 901 et seq.

The Longshoremen's and Harbor Workers' Compensation Act governs the liability of employers for job-related injury to maritime employees. The Act specifies a fixed-dollar-amount liability for each of several types of injury, and, importantly here, stipulates that such liability "shall be exclusive and in place of all other liability of such employer." Id. at § 905.

33 U.S.C. § 1321

Section 311 of the Clean Water Act bans the discharge of oil and hazardous substances into the navigable waters of the United States. Liability of the discharger for federal cleanup costs may not exceed —

the greater of $125 per gross ton or $125,000, for inland barges

the greater of $150 per gross ton or $250,000, for any other vessels

$50 million for onshore and offshore facilities

Similar liability limits are established for third parties. The President is permitted to set liability limits of less than $50 million for onshore and offshore facilities.

Liability limits do not apply where the United States shows that the discharge was the result of "willful negligence or willful misconduct within the privity and knowledge of the owner."

33 U.S.C. § 1517

Section 18 of the Deepwater Port Act governs liability for oilspills in the vicinity of deepwater ports licensed under the Act. Liability of the discharger for oilspill damage and cleanup costs may not exceed —

the lesser of $150 per gross ton or $20 million, for vessels

$50 million for deepwater port licensees

Liability limits do not apply if it can be shown that the discharge was the result of "gross negligence or willful misconduct within the privity and knowledge" of the vessel owner/operator or port licensee.

42 U.S.C. § 247b(k)

To protect manufacturers of swine flu vaccine from liability for personal injury or death arising from administering the vaccine, other than that arising from the manufacturer's negligence or departure from contract terms, the United States agrees to stand in the shoes of the manufacturer for litigation purposes. The United States is thus to be liable under any applicable theory of state law — negligence, strict liability, etc.

42 U.S.C. § 9607(c)

Section 107(c) of the Comprehensive Environmental Response, Compensation and Liability Act is concerned with the liability of generators, transporters, and disposers of hazardous substances for cleanup costs and injury to certain natural resources. Such liability may not exceed —

the greater of $300 per gross ton or $5 million, for vessels carrying hazardous substances

the greater of $300 per gross ton or $500,000, for any vessel other than those specified immediately above

$50 million (or a lesser amount established by the President), for any motor vehicle, aircraft, pipeline, or rolling stock

all costs of response plus $50 million for any natural resources damage, for any facility other than those specified immediately above

Liability limits do not apply if the hazardous substance was released as the result of "willful misconduct or willful negligence," or a safety standard violation, "within the privity or knowledge" of the responsible person. The limits also do not apply where such person fails to cooperate with certain governmental cleanup activities.

43 U.S.C. § 1653

Section 204 of the Trans-Alaska Pipeline (TAP) Authorization Act stipulates that the liability of the pipeline right-of-way holder to injured parties is limited to $50 million of strict liability, further liability to be established under ordinary rules of negligence.

Similarly, the liability of a vessel carrying TAP oil for injuries and cleanup costs is capped at $14 million of strict liability. (The TAP Fund covers the next $86 million of damage awards, also with strict liability. Beyond this amount, claims are to be litigated under other federal or state law.)

43 U.S.C. § 1814(b)

Section 304(b) of the Outer Continental Shelf Lands Act Amendments of 1978 addresses liability for oilspill-related injury in connection with offshore facilities and vessels transporting oil from those facilities. Such liability may not exceed —

- the greater of $300 per gross ton or $250,000, for a vessel
- the total of removal and cleanup costs, "and an amount limited to $35 million for all damages"

Liability limits do not apply when the incident "is caused primarily by willful misconduct or gross negligence," or a safety standard violation, "within the privity or knowledge or the owner or operator." The liability limit for vessels also does not apply when the owner/operator fails to cooperate with federal cleanup efforts.

46 U.S.C. §§ 181-196

The Limitation of Liability Act of 1851 provides that a vessel owner's liability for any loss of cargo on board, damage by collision, or any other loss or damage shall not exceed "the amount or value of the interest of such owner in such vessel, and her freight then pending."

The liability limit does not apply where the acts or omissions causing the loss or damage are within "the privity or knowledge" of the vessel owner.

Warsaw Convention

This treaty, as supplemented by the "Montreal Agreement" (CAB Agreement 18900, approved by Order E-23680, May 13, 1966), limits the liability of air carriers on international flights to $75,000 per passenger in cases of passenger injury or death. It also sets forth liability limits for baggage and cargo.

The liability limit does not apply where the carrier fails to post notice of it, or where there is willful misconduct.

The key distinction between the liability limitation in the Price-Anderson Act and those in the listed statutes is the absence of any exception to the limitation in Price-Anderson. Most other federal statutes strip a defendant of the liability-limitation shield under certain conditions, typically where there is willful misconduct, gross negligence, or the like. By contrast, The Price-Anderson Act permits no end-runs around its limitation on public liability per nuclear incident, whether there has been negligence, gross negligence, or whatever on the part of entities responsible for the incident.

A second difference between Price-Anderson and some other laws is that the recovery limit in Price-Anderson applies to incidents, rather than to individual plaintiffs (recall the FHLCA and the Warsaw Convention). Thus under Price-Anderson and its like, recoveries of individual claimants have to be reduced where the total of court awards in connection with an incident exceed the Act's liability limitation. Estimates of probable aggregate injury in the wake of a nuclear incident make such fractional recoveries a distinct possibility.

A third difference is that the Price-Anderson limit covers all types of claims that may be brought. Some of the listed statutes (e.g., the Clean Water Act and CERCLA) confine themselves to certain categories of injury, leaving unaffected the pursuit of recovery for other types of injury.

A possible fourth difference is that while Price-Anderson bars recovery beyond its liability limit under any other statute or common law, it is not clearly settled that the same is true for all the listed statutes. Which is to say, the liability limits in some of these statutes may not preempt recovery beyond the stated limit through plaintiff's resorting to other causes of action flowing from the same injury. A full examination of this question is beyond the scope of this memorandum.

You further requested discussion of the 1851 Limitation of Liability Act as invoked after the grounding of the oil tanker Torrey Canyon off the coast of England in 1967. As reported in Gilmore and Black, The Law of Admiralty 823 n.13e and 824 n.13ℓ (1975):

> A $50 fund, representing the value of one salvaged lifeboat, was approved in American limitation proceedings which followed

> the stranding and sinking of the Torrey Canyon off the south-west coast of England in 1967. See In Re Barracuda Tanker Corp., 281 F. Supp. 228 (S.D.N.Y. 1968). The English and French Governments also instituted actions against the owner in Bermuda, Singapore, and Rotterdam. ... [This] litigation was eventually settled out of court for 3 million pounds, to be equally divided between the French and English Governments .... Following that settlement, the limitation proceedings which had been instituted in the United States (and other countries) were discontinued.
>
> [T]he Torrey Canyon episode led to private agreements under which the major world tanker owners, presumably in the hope of discouraging legislation, agreed to accept limited liability for negligent oil pollution.

Finally, you ask for a comparison between the list of federal liability-limiting statutes in Anderson, "Limits on Liability: The Price-Anderson Act Versus Other Laws," 45 J. Risk and Insurance 651 (1978), and the enumeration of federal limitations on liability set out here. Mr. Anderson lists the Warsaw Convention, the Water Quality Improvement Act (later incorporated into the Clean Water Act), the Trans-Alaska Pipeline Authorization Act, and the "swine flu" act. Besides these enactments, this memorandum lists five additional statutes: the Longshoremen's and Harborworkers' Compensation Act, Deepwater Port Act, Comprehensive Environmental Response, Compensation, and Liability Act, Outer Continental Shelf Lands Amendments of 1978, and Limitation of Liability Act of 1851.

Robert Meltz
Legislative Attorney
American Law Division

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 11: If Price-Anderson were allowed to expire, could DOE still attract the same caliber of private firms that we have today? Would large companies be willing to expose their considerable assets to potentially ruinous liability suits? Or might we see a significant drop-off in interest on the part of large firms, and therefore be left with choosing from a group of small--shall we say, "fly-by-night"--companies, with very little in the way of assets to lose? What could happen to the quality of the work being performed?

Answer: In order to carry out its programs, the Department is highly dependent on products and services offered by various businesses, professional organizations, educational institutions, and other entities. It is clear from the Department's experience that if its authority to enter into indemnity contracts were discontinued, there would be a strong reluctance on the part of existing contractors and potential contractors to do business with the Department. These include the contractor managers of the Department's major installations, as well as suitable replacement contractors. We believe this strong reluctance would extend to subcontractors, suppliers, and vendors who sell, design, build, test, or perform other work or services on any component of a nuclear facility or device.

Answer 11
(continued): Prior to the preparation of DOE's 1983 report to Congress, a request was made through the Department's Field Offices to determine the views of the Department's contractors concerning the need for continuation or modification of the Act. In response, a number of contractors noted that the Act is essential to the continuation of their contractual activities with the Government.

If existing contractors refuse to continue doing business with the Department, we cannot say with any degree of certainty what "type" of companies would attempt to fill the void. We can say, however, that the Department has very stringent requirements that must be satisfied before accepting a contractor to carry out its work. If a contractor cannot satisfy established criteria, it simply would not qualify and would not be awarded a contract by the Department. Our concern, therefore, is not the quality of work expected from "fly-by-night" companies but rather we foresee difficulties in obtaining sufficient numbers of competent contractors and in the Department's ability to carry out its nuclear programs.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 12: Why is DOE opposed to covering precautionary evacuations under Price-Anderson insurance? Is there any way we could include such evacuations, provided the Governor of the State or the Secretary of Energy concurred on the need for the evacuations?

Answer: A precautionary evacuation would be covered if there were a nuclear incident as defined in the Act.

The Department believes that the Act should not be amended to provide coverage when there is no nuclear incident. First, the Department would not order or control off-site evacuations for nuclear incidents at DOE facilities, but merely provides local authorities with data to allow them to decide whether or not to order an evacuation. A precautionary evacuation would be a local government decision, not an action by the Department. Second, in light of actual experience, DOE's nuclear programs do not appear to require special attention or treatment with regard to precautionary evacuations, as compared with other potentially hazardous activities. The Department believes that protection to the public for precautionary evacuations due to possible nuclear risks should be dealt with in the same manner as other activities involving potential hazards, such as poisonous gas, toxic liquids, explosive or pyrophoric fuels, and other hazardous materials.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 13: With regard to the 20-year statute of limitations provision under Section 170(n) of the Atomic Energy Act, is this intended to be a minimum standard or a maximum standard? Would a state statute of limitation longer than 20 years apply in the case of an Extraordinary Nuclear Occurrence?

Answer: The Act and the legislative history of the Act establishes that the statute of limitations in Price-Anderson:

> "...is not a maximum period for assertion of Price-Anderson covered claims, since the waiver authorized by the bill serves only to avoid the application of more restrictive State statutes of limitations. Such waiver leaves undisturbed the laws of those States which have enacted--or in the future may enact--longer periods of limitation. Moreover, it is intended that the waivers of other defenses, as authorized by this bill, would continue during such longer period of limitation established by State statute." Senate Report No. 1605, September 16, 1966.

Therefore, a state statute of limitation longer than 20 years would apply in the case of an extraordinary nuclear occurrence.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 14:	In lawsuits relating to a public liability claim for damages from a nuclear incident involving a DOE contractor, can the contractor assert, as a defense to that claim, the doctrine of sovereign immunity for (a) incidents that are less than an Extraordinary Nuclear Occurrence or (b) incidents that are designated an Extraordinary Nuclear Occurrence? Do you support this view? Why or why not?
Answer:	Sovereign immunity is a defense which may only be asserted by the sovereign, i.e., the government. The United States is immune from suit unless it consents to be sued and then may be sued only in strict compliance with the terms of the waiver. Actions for personal injury and property damage may be filed against the United States pursuant to the terms and conditions of the Federal Tort Claims Act, which is a limited waiver of sovereign immunity. The Act allows suits to be maintained for damages arising from acts or omissions of employees of the government. Employees of the government are defined as employees of a federal agency. In defining the term "Federal agency," the Act includes corporations primarily acting as instrumentalities or agencies of the United States but specifically excludes contractors with the United States. In the absence of any specific statutory authority, a contractor has no legal right to claim sovereign immunity in a tort action.

Answer 14 (continued): We support the view that a contractor should not be allowed to assert the defense of sovereign immunity.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 15: If waiver of defenses were applied to all nuclear incidents, would this provide an additional strict liability remedy to onsite workers, who already have a strict liability remedy in workers' compensation? Is it wise to provide a strict liability remedy for radiation releases that may in fact be within radiation limits established by the NRC?

Answer: "Claims under State or Federal workmen's compensation acts of employees of persons indemnified who are employed at the site of and in connection with the activity where the nuclear incident occurs" are specifically excluded from Price-Anderson coverage (42 U.S.C. 2014(w)). Therefore, the waiver of defenses provision would not affect such claims.

However, workers' compensation acts generally provide a remedy only for claims between an employer and its employee. An employee of a subcontractor may have a remedy available against a DOE contractor that would not be covered by workers' compensation. We believe that the imposition of strict liability for such suits may encourage spurious claims. Therefore, we believe that only after there has been a substantial discharge of radiation, as defined by Extraordinary Nuclear Occurrence criteria, should the defense of fault be waived by a DOE contractor or a nuclear utility.

Answer 15
(continued): We do not believe that it is wise to provide a strict liability remedy for radiation releases that may be within radiation limits established by the NRC.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 16: In Commissioner Bernthal's testimony, he addressed the issue of punitive damages. In his opinion, if punitive damages were allowed to be paid with Price-Anderson insurance funds, this would remove the deterrent value of such damages, because the insurance pools, and not the utility at fault, would be responsible for the payments. Do you agree with Commissioner Bernthal that punitive damages should *not* be insurable under the Price-Anderson Act?

Answer: Neither the Price-Anderson Act nor its legislative history specifically addresses whether or not an award of punitive damages is available in cases arising under the Act, nor if such award is available, whether or not it may be paid from the financial protection established by the Act. Although *Silkwood v. Kerr-McGee Corp.,* 104 S. Ct. 615 (1984), found that a state court had authority to award punitive damages under state law against an NRC licensee, it did not address whether or not punitive damages would be payable under the Price-Anderson system. (The Kerr-McGee facility involved was not covered by Price-Anderson). We believe that payment of punitive damages under the Price-Anderson system would be inconsistent with one of the major purposes of the Act, which is to provide a substantial, assured, and timely source of funds to pay claims for persons injured or property damaged by a nuclear incident.

Answer 16 (continued): However, the Department has never addressed the issue of whether punitive damages should be insurable under the Price-Anderson Act.

QUESTIONS SUBMITTED BY SENATORS McCLURE AND DOMENICI

PRICE-ANDERSON

Question 17:	Commissioner Bernthal also commented on the Silkwood decision, in which the Supreme Court held that a state may award punitive damages against an entity regulated by NRC for actions the jury finds negligent, even though no NRC regulations were violated. In Commissioner Bernthal's opinion, this decision sets a bad precedent, because it in effect allows "every jury in America... (to) theoretically serve as its own Nuclear Regulatory Commission." Do you agree with Commissioner Bernthal's opinion? Do you feel that Congress should amend the Atomic Energy Act to reaffirm its principle that a licensee fully in compliance with NRC regulations should not be held liable for punitive damages?
Answer:	Yes, we agree that permitting a jury to define what constitutes the exercise of reasonable care in handling plutonium as permitted in the Silkwood case, invades the field of nuclear safety concerns by setting up substantive standards in competition with those fixed by federal law. (See Brief for the United States as Amicus Curiae Supporting Appellees, Silkwood v. Kerr-McGee Corp., 104 S. Ct. 615, (1984).) We would not object to an amendment to the Atomic Energy Act to clarify the principle that a licensee in compliance with NRC regulations should not be held liable for punitive damages.

PRICE-ANDERSON TABLE

Issue	Position*
Limitation on Liability:	
a. NRC licensees	Retain limitation but increase current amount
b. DOE contractors	Retain limitation but increase current amount and make equivalent to commercial licensee limit
c. DOE waste activities	Same as b., above
Waiver of Defenses:	
a. ENO criteria	Retain and extend to cover waste activities
b. Statute of Limitations	20 years acceptable
Length of Extension:	Minimum of 10 years
Precautionary Evacuations:	No coverage if there is no nuclear incident
Acts of Untraceable Theft or Sabotage:	No coverage

*If no position has been established indicate "none."

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Department of Energy
Washington, DC 20585

July 23, 1985

Honorable Pete V. Domenici
Chairman, Subcommittee on Energy
Research and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On June 25, 1985, Ben C. Rusche, Director of the Office of Civilian Radioactive Waste Management, appeared before the Energy and Natural Resources Subcommittee on Energy Research and Development to discuss the issues under consideration for renewal of the Price-Anderson Act.

Following that hearing, you submitted written questions for our response to supplement the record. Enclosed for your information are the answers to those questions, which also have been sent directly to the Committee staff.

Answers to the additional questions, which you sent with your letter dated July 2, are being prepared and will be forwarded just as soon as they are completed.

If you have any questions, please call Ingrid Nelson or Cathy Hamilton of my staff on 252-4277. They will be happy to assist you.

Sincerely,

Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

POST-HEARING QUESTIONS AND ANSWERS

Related to the

JUNE 25, 1985 HEARING

Before the

SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
of the
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

WITNESS: BEN C. RUSCHE
DIRECTOR OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

Q 1. SHOULD THE SAME AMOUNT OF FUNDS BE AVAILABLE TO COVER CLAIMS FOR ACCIDENTS INVOLVING NUCLEAR WASTE ACTIVITIES AS IS AVAILABLE FOR OTHER DOE CONTRACTOR ACTIVITIES? ARE THE CONSEQUENCES OF WASTE-RELATED ACCIDENTS ANTICIPATED TO BE OF THE SAME MAGNITUDE AS OTHER NUCLEAR ACCIDENTS? ARE THERE ANY STUDIES UNDERWAY THAT ADDRESS THE CONSEQUENCES OF WASTE-DISPOSAL ACCIDENTS?

A 1. Yes, the Department believes that equivalent protection should be afforded to nuclear activities including nuclear waste operations. As stated in my testimony on June 25, 1985, waste activities are not faced with considerations such as stored energy, hence the range of parameters that must be considered is somewhat smaller. However, we have commissioned a study by Brookhaven National Laboratory to clarify the possible consequences of an accident involving nuclear waste. We have little empirical data because there have been no such incidents involving release of high-level nuclear waste despite many years of operational experience in defense-related programs.

Q 2. DO YOU FEEL THAT DOE's CURRENT CRITERIA FOR DEFINING AN EXTRAORDINARY NUCLEAR OCCURRENCE ARE SUFFICIENTLY BROAD TO COVER WASTE-RELATED INCIDENTS?

A 2. Yes.

Q 3a. IS LIABILITY INSURANCE FOR THE NUCLEAR WASTE DISPOSAL PROGRAM CONSIDERED A PART OF THE "COST OF DOING BUSINESS"? IS IT THEREFORE APPROPRIATE TO USE THE NUCLEAR WASTE FUND ESTABLISHED IN THE NUCLEAR WASTE POLICY ACT TO PAY THE COSTS OF LIABILITY CLAIMS?

A 3a. The Department does not purchase liability insurance nor will DOE contractors be required to purchase separate liability policies in connection with nuclear waste disposal programs. However, provision of funds to satisfy liability claims that may arise appears to be a legitimate cost of doing business, thus an appropriate expense to be borne by the Nuclear Waste Fund.

Q 3b.IN THE ABSENCE OF STATUTORY AUTHORITY UNDER PRICE-ANDERSON TO INCLUDE COVERAGE FOR WASTE ACTIVITIES, HOW WOULD YOU PROVIDE FUNDING FOR LIABILITY CLAIMS?

A 3b.As noted in my appearance before this Committee on June 25, 1985, the Department believes and operates on the premise that the present Price-Anderson statute provides the basic coverage necessary to indemnify operations conducted in the nuclear waste program.

We believe that the cost of liability claims arising out of Nuclear Waste Policy Act (NWPA) activities should be covered by the Nuclear Waste Fund established by the NWPA. Therefore, in the absence of Price-Anderson, we would use the Nuclear Waste Fund to cover the cost of liability claims for NWPA activities. Since the Federal government follows a policy of self-insurance, we would probably not utilize private insurers to cover third-party liability claims.

Q 4. IF FUNDS WERE TO BE DRAWN PROPORTIONATELY FROM THE NUCLEAR WASTE FUND AND FROM FEDERAL REVENUES TO COVER ACCIDENTS IN THE NUCLEAR WASTE DISPOSAL PROGRAM, WHAT DO YOU FEEL WOULD BE AN APPROPRIATE METHOD TO MAKE SUCH AN APPORTIONMENT?

A 4. Implementation of the President's decision to utilize the repositories developed for commercial spent fuel and/or high-level nuclear waste to also dispose of high-level defense waste has required the Department to analyze expected program costs to determine appropriate cost allocations. This on-going review has already resulted in a number of areas of agreement and we are hopeful of completing the evaluation very soon. That report should provide helpful insight.

Q 5. CONGRESSMAN SID MORRISON HAS INTRODUCED A BILL, HR 2524, THAT PROVIDES FOR GOVERNMENT INDEMNIFICATION FOR ALL NUCLEAR INCIDENTS ARISING FROM THE NUCLEAR WASTE DISPOSAL PROGRAM. WHAT IS YOUR OPINION OF HIS BILL, ESPECIALLY IN COMPARISON TO SIMILAR PROVISIONS IN S. 1225?

A 5. In regard to high-level nuclear waste storage, transportation and disposal, the Department has enunciated the policy that these activities enjoy indemnity protection equivalent to other nuclear programs; that there are no pecularities in waste that would argue for a separate scheme of protection; that the waiver of defenses provision should be modified to expressly provide coverage for waste activities; that within reasonable limitations set by the Congress, the public should continue to be assured of a timely and facilitated source of funds for payment of claims in the event of a nuclear accident; and, that the beneficiaries of waste disposal be assessed the cost of the service. These principles should be considered in any indemnification system covering the nuclear waste program. I would not be in a position to analyze individual bills beyond these general Departmental guidelines.

Q 6. HOW ADEQUATELY DO YOU FEEL S. 1225 ADDRESSES THE CONCERNS OF THOSE STATES THAT ARE CANDIDATE SITES FOR WASTE-REPOSITORY?

A 6. Of course, it would be inappropriate for me to speak for the States, and I would not presume to do so. Addressing the question of liability limitations, however, the provisions of S. 1225 would increase the prior-agreed pool of funds available without additional authorization from $500 million to $2.4 billion.

As noted in my appearance before this Committee, the Price-Anderson system, particularly with the modification just described, in my opinion, provides an entirely adequate, fair, and equitable basis for Federal-State cooperation.

Q 7. DOES DOE's OFFICE OF CIVILIAN RADIOACTIVE WASTE PLAN TO ESTABLISH A "PERPETUAL CARE FUND" TO COVER POST-CLOSURE ACTIVITIES AT A WASTE REPOSITORY? WILL POST-CLOSURE FUNDS INCLUDE MONEY TO PAY FOR CLAIMS IN THE EVENT OF AN ACCIDENT?

A 7. DOE has not yet addressed the issue of a post-closure perpetual care fund, recognizing that closure will not occur for over 100 years. However, DOE would be required to seek a license amendment for permanent closure (under 10 CFR Section 60.51) and issues regarding post-closure care would be addressed at that time.

Q 8. IN COMMISSIONER BERNTHAL'S TESTIMONY, HE ADDRESSED THE ISSUE OF PUNITIVE DAMAGES. IN HIS OPINION, IF PUNITIVE DAMAGES WERE ALLOWED TO BE PAID WITH PRICE-ANDERSON INSURANCE FUNDS, THIS WOULD REMOVE THE DETERRENT VALUE OF SUCH DAMAGES, BECAUSE THE INSURANCE POOLS, AND NOT THE UTILITY AT FAULT, WOULD BE RESPONSIBLE FOR THE PAYMENTS. DO YOU AGREE WITH COMMISSIONER BERNTHAL THAT PUNITIVE DAMAGES SHOULD NOT BE INSURABLE UNDER THE PRICE-ANDERSON ACT?

A 8. Neither the Price-Anderson Act nor its legislative history specifically addresses whether or not an award of punitive damages is available in cases arising under the Act. Although Silkwood v. Kerr-McGee Corp., 104 S. Ct. 615 (1984) found that a state court had authority to award punitive damages under state law against an NRC-licensee, it did not address whether or not punitive damages would be payable under the Price-Anderson system. (The Kee-McGee facility involved was not covered by Price-Anderson). We believe that payment of punitive damages under the Price-Anderson system could be inconsistent with one of the major purposes of the Act, which is to provide a substantial, assured, and timely source of funds to pay claims for persons injured or property damaged by a nuclear incident. However, the Department has never addressed the issue of whether punitive damages should be insurable under the Price-Anderson Act.

Q 9. COMMISSIONER BERNTHAL ALSO COMMENTED ON THE SILKWOOD DECISION, IN WHICH THE SUPREME COURT HELD THAT A STATE MAY AWARD PUNITIVE DAMAGES AGAINST AN ENTITY REGULATED BY NRC FOR ACTIONS THE JURY FINDS NEGLIGENT, EVEN THOUGH NO NRC REGULATIONS WERE VIOLATED. IN COMMISSIONER BERNTHAL'S OPINION, THIS DECISION SETS A BAD PRECIDENT, BECAUSE IT IN EFFECT ALLOWS "EVERY JURY IN AMERICA... (TO) THEORETICALLY SERVE AS ITS OWN NUCLEAR REGULATORY COMMISSION."

DO YOU AGREE WITH COMMISSIONER BERNTHAL'S OPINION? DO YOU FEEL THAT CONGRESS SHOULD AMEND THE ATOMIC ENERGY ACT TO REAFFIRM ITS PRINCIPLE THAT A LICENSEE FULLY IN COMPLIANCE WITH NRC REGULATIONS SHOULD NOT BE HELD LIABLE FOR PUNITIVE DAMAGES?

A 9. Yes, we agree that permitting a jury to define "what constitutes the exercise of reasonable care in handling plutonium" as permitted in the Silkwood case, invades the field of nuclear safety concerns by setting up substantive standards in competition with those fixed by Federal law. See Brief for the United States as Amicus Curiae Supporting Appellees Silkwood v. Kerr-McGee Corp., 104 S. Ct. 615, (1984). We would not object to an amendment to the Atomic Energy Act to clarify that a licensee fully in compliance with NRC regulations should not be held liable for punitive damages.

PRICE-ANDERSON TABLE

ISSUE	POSITION
LIMIT ON LIABILITY;	
a) NRC licensees	For all three categories, the Department does not support changes that would implement unlimited liability
b) DOE contractors	
c) DOE waste activities	
Waiver of Defenses:	
a) ENO criteria	The Department has recommended that this provision be modified to expressly include high-level nuclear waste activities.

[illegible]

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510

June 27, 1985

The Honorable Ben C. Rusche
Director, Office of Civilian
  Radioactive WasteManagement
U. S. Department of Energy
Washington, D.C. 20585

Dear Ben:

On Tuesday, June 25 you appeared before my Subcommittee to present testimony on Senate bill S. 1225. As a follow-up to this hearing, I would like to request that you provide written responses to the attached questions from myself and my Colleagues. In addition to the questions, I have attached a table of issues under consideration for Price-Anderson renewal. I ask that you briefly summarize your position on each of the issues for our records. If you have any questions on these matters, please call Marilyn Meigs of my staff at 202-224-4431.

In order that this information can be made part of the record, I must receive your written responses by no later than July 10, 1985.

Your position in this hearing is greatly appreciated.

Sincerely,

Pete V. Domenici
Chairman, Subcommittee on
  Energy Research and Development

Attachments

PVD:MMt

Questions for the Record
for Ben C. Rusche
Director, Office of Civilian Radioactive Waste
Department of Energy

From Senators McClure and Domenici

1. Should the same amount of funds be available to cover claims for accidents involving nuclear waste activities as is available for other DOE contractor activities? Are the consequences of waste-related accidents anticipated to be of the same magnitude as other nuclear accidents? Are there any studies underway that address the consequences of waste-disposal accident?

2. Do you feel that DOE's current criteria for defining an Extraordinary Nuclear Occurrence are sufficiently broad to cover waste-related incidents?

3a. Is liability insurance for the nuclear waste disposal program considered a part of the "cost of doing business"? Is it therefore appropriate to use the Nuclear Waste Fund established in the Nuclear Waste Policy Act to pay the costs of liability claims?

3b. In the absence of statutory authority under Price-Anderson to include coverage for waste activities, how would you provide funding for liability claims?

4. If funds were to be drawn proportionately from the Nuclear Waste Fund and from federal revenues to cover accidents in the nuclear waste disposal program, what do you feel would be an appropriate method to make such an apportionment?

5. Congressman Sid Morrison has introduced a bill, H.R. 2524, that provides for government indemnificatin for all nuclear incidents arising from the nuclear waste disposal program. What is your opinion of his bill, especially in comparison to similar provisions in S. 1225?

6. How adequately do you feel S. 1225 addresses the concerns of those states that are candidate sites for a waste-repository?

7. Does DOE's Office of Civilian Radioactive Waste plan to establish a "perpetual-care fund" to cover post-closure activities at a waste respository? Will post-closure funds include money to pay for claims in the event of an accident?

8. In Commissioner Bernthal's testimony, he addressed the issue of punitive damages. In his opinion, if punitive damanges were allowed to be paid with Price-Anderson insurance funds, this would remove the deterrent value of such damages, because the insurance pools, and not the utility at fault, would be responsible for the payments. Do you agree with Commissioner Bernthal that punitive damages should not be insurable under the Price-Anderson Act?

9. Commissioner Bernthal also commented on the Silkwood decision, in which the Supreme Court held that a state may

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award punitive damages against an entity regulated by NRC for actions the jury finds negligent, even though no NRC regulations were violated. In Commissioner Bernthal's opinion, this decision sets a bad precident, because it in effect allows "every jury in America... (to) theoretically serve as its own Nuclear Regulatory Commission."

Do you agree with Commissioner's Bernthal's opinion? Do you feel that Congress should amend the Atomic Energy Act to reaffirm its principle that a licensee fully in compliance with NRC regulations should not be held liable for punitive damages?

PRICE-ANDERSON TABLE

Issue	Position*
Limit on Liability:	
a) NRC licensees	
b) DOE contractors	
c) DOE waste activities	
Waiver of Defenses:	
a) ENO criteria	

Department of Energy
Washington, DC 20585

July 31, 1985

Honorable Pete V. Domenici
Chairman, Subcommittee on Energy
  Research and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

On June 25, 1985, Ben C. Rusche, Director of the Office of Civilian Radioactive Waste, appeared before the Energy and Natural Resources Subcommittee on Energy Research and Development, to discuss S. 1225, the Price-Anderson Act.

With your letter dated July 2, 1985, you submitted additional follow-up questions for our response. Enclosed for your information are the answers to those questions, which also have been sent directly to the Committee staff.

If you have any questions, please have your staff call Ingrid Nelson or Cathy Hamilton on 252-4277. They will be happy to assist.

Sincerely,

Robert G. Rabben
Assistant General Counsel
for Legislation

Enclosures

POST-HEARING QUESTIONS AND ANSWERS

Related to the

JUNE 25, 1985 HEARING

Before the

SUBCOMMITTEE ON ENERGY RESEARCH AND DEVELOPMENT
of the
COMMITTEE ON ENERGY AND NATURAL RESOURCES
UNITED STATES SENATE

WITNESS: BEN C. RUSCHE
DIRECTOR OF CIVILIAN RADIOACTIVE WASTE MANAGEMENT

QUESTION 1: Extraordinary Nuclear Occurrence (ENO):
On page 2 of your testimony, you seem to indicate that the present application of ENO, including DOE's waiver of defense, for NRC-indemnified facilities can be readily extended to high-level waste and spent fuel activities.

a) Yet, following the NRC decision in April, 1980 that the TMI accident did not constitute an ENO, it has not been clear what level of damage would trigger the 2nd Criterion -- "substantial" damage to persons or property off-site?

b) Given the uncertainty over what constitutes "substantial damage", do you believe it is appropriate to simply extend the existing ENO definitions to waste activities?

c) Do you believe that all activities associated with the high-level waste activities--including transportation, storage, disposal, and others--should be covered by the present interpretation of ENO? Or do the unique characteristics of waste activities require a different formulation?

d) I understand the NRC has published a proposed rulemaking on the 2nd Criterion of the ENO. Has DOE submitted any comments in response to this rulemaking? If so, please submit them for the record.

e) If there is sufficent uncertainty regarding the interpretation of an ENO, do you believe it is advisable for Congress to establish statutory criteria for clarification in amendments to Price-Anderson legislation?

ANSWER: In summary, we do not feel it is necessary to establish statutory criteria for determining when an ENO has occurred, but the waiver of defenses provision of the Act, a key benefit of the ENO finding, should be amended to apply to an ENO occurring in the course of high-level waste activities. DOE's criteria for determining whether an ENO has occurred are suitable for and would apply to nuclear accidents occurring in DOE's waste program. These criteria are published in 10 CFR Part 840 and are substantively identical to the Nuclear Regulatory Commission (NRC) criteria for making such a determination. (10 CFR Part 140, Subpart E). In April 1985, the NRC published a proposed rule giving three options for amending their ENO criteria in order "to simplify the administrative criteria" and "to avoid the problems encountered by the Commission in applying the existing criteria to the accident at the Three Mile Island nuclear plant (TMI)." DOE is reviewing the NRC proposals with regard to its effect on NRC-licensed powerplants. We are also reviewing the criteria from the standpoint of how similar criteria would affect DOE nuclear facilities, including waste facilities. Comments are due to the NRC by August 7, 1985, and we intend to complete our review before that time.

At this time, we see no need to amend Section 11 (j) of the Atomic Energy Act. If implementing changes are desirable, they can be accomplished through the rulemaking process.

Notwithstanding the applicability of the ENO criteria to a waste facility, a key benefit of an ENO finding, the waiver of defenses, is not presently applicable to an ENO at a waste facility and we recommend that Section 170 (n) of the Act be amended to provide such applicability.

If Section 170(n) of the Atomic Energy Act is amended as the Department has recommended to include nuclear waste activities, the ENO criteria in 10 CFR, Part 840 would be similarly amended to include such activities.

QUESTION 2: C&C Agreements:

a) Please submit a list of the discussions that DOE has been carrying out with states and Indian tribes over the past two years on C&C agreements. In the table, please include at what stage the discussions stand today, the major obstacles to reaching agreements, and DOE's response to state/Indian tribe objections.

b) Is it accurate to characterize the DOE-state of Washington talks as being the furthest advanced of all the C&C discussions? Is it your understanding that the liability question is the only provision that remains unresolved prior to a successful agreement?

ANSWER:

a) I. State of Washington

July 27, 1983 - Initiation of C&C negotiations, focused almost exclusively on procedural issues.

August 16 through November 30, 1983 - Six sessions were conducted, resulting in a draft C&C Agreement that was distributed for review by both DOE and the State of Washington Legislature.

February 9, 1984 - Discussions concerning the State of Washington Legislative Joint Subcommittee on Radioactive Waste comments and proposed amendments to the draft C&C.

April 12 through June 8, 1984 - Three negotiating sessions were conducted at which time significant discussions took place on the resolution of outstanding issues. The following were identified as open items at the time.

- Foreign Waste
- Stop Work
- Liability

- o Defense Waste
- o Sent Payments in Lieu of Taxes

June 29 1984 - Additional discussions concerning the open items in the prior C&C draft. Open issues remaining were liability and defense waste.

December 4, 1984 - This session was conducted to briefly review the status of the C&C Agreement and to again define both parties' positions pertaining to the open items, liability and defense waste.

Current Status - The State of Washington Nuclear Waste Board is in the process of reviewing the draft C&C Agreement.

The recent decision to co-mingle defense waste with commercial waste should resolve the issue of defense waste. In regard to liability, this should be the only provision that remains unresolved prior to a successful agreeement.

II. Yakima Indian Nation and the Confederated Tribes of the Umatilla Indian Reservation

The Yakima Indian Nation requested on May 23, 1983, to commence negotiations on a C&C Agreement. Subsequently, they have made the determination to postpone further negotiations until the State of Washington has agreed to a C&C Agreement.

The Confederated Tribes of the Umatilla Indian Reservation have recently requested to commence negotiation of a C&C Agreement. The first such meeting between DOE and the Umatillas is scheduled for August 14, 1985.

The above C&C negotiations have been initiated by the State of Washington, the Yakimas and the Umatillas prior to the decision to characterize a particular site which formally triggers the Nuclear Waste Policy Act's C&C agreement provisions. No other States or Indian Tribes have at this time requested the initiation of C&C negotiations.

b) It is accurate to characterize the DOE - State of Washington talks as being the furthest advanced of all C&C Agreement discussions and it is our understanding that the liability question is the key unresolved question.

QUESTION 3: Financing

a) Explain the legal justification under the NWPA concerning the possibility of raising the 1 mill/kwh fee on electricity generation in the Nuclear Waste Fund for the purpose of payments to claimants for accidents associated with the waste activities.

Specifically, Section 302 of the Act provides the following flexibility in the level of the fee:

"In the event the Secretary determines that either insufficient or excess revenues are being collected... he shall propose an adjustment to the fee to insure full cost recovery." (emphasis added)

Can you accurately describe potential liability to be a "cost" that should be eligible for full cost recovery under the Act?

b) Have you opposed the establishment of a separate fund, to be administered by DOE or NRC, that would be available for liability associated with waste activities? If so, why?

ANSWER:

a) We have determined to treat any such incurred liability as a "cost" under the Act, Section 862 (d) and therefore, to settle proper claims accordingly as a charge to the Waste Fund. If necessary to cover costs incurred, the fees can be adjusted upwards and to provide for funds on a more expedited basis, authority exists under the NWPA to borrow from the Treasury.

b) We have not had occasion to take any position on the establishment of a separate fund to be administered by DOE or NRC. Nevertheless, we would not favor creation of a separate fund, since we do not believe that there is any need to tie up funds in a contingency account.

QUESTION 4: Commingling:

On Page 4, you mention that talks are currently underway with DOE/Defense Programs to determine an "equitable cost allocation system" for the commingled, high-level nuclear waste.

Describe more specifically what kind of methodology you are considering. By "equitable," do you mean a system of cost allocation based on volume, degree of radioactivity, or what?

ANSWER: We are presently engaged in evaluating a number of factors with the aim of arriving at a fee for defense wastes that can be accepted by the taxpayer and the ratepayer as an equitable allocation waste disposal costs. These factors include volume, numbers of packages, levels of radioactivity, heat levels, power equivalence. The allocation approach resulting from this process, as well as its underlying assumptions and methodologies, will be made available for public review and comment before the final fee methodology is put into effect.

QUESTION 5: Nature of Potential Accident/Injury:

a) Considering the entire mode of high-level waste activities, what do you estimate to be the accident/injury with the greatest probability of occurrence?

b) Has the Department developed any specific estimates/tables on accidents probabilities for waste activities? If so, please submit them for the record.

ANSWER:

a) OCRWM has recently initiated risk assessment studies of the total high-level waste and spent fuel management system at the Brookhaven National Laboratory and the Pacific Northwest Laboratory. One result of that work will be such an estimate, however, it is too early to speculate on the outcome at.

b) The studies referred to above are intended to produce a comprehensive set of estimates and tables of possible accidents, with their probabilities and consequences, for all components of the waste management system, as presently envisaged. The preliminary results are expected to be available within a year.

Before the passage of the Nuclear Waste Policy Act of 1982, the Department published accident analyses of earlier designs of the waste management system, primarily in the "Final Environmental Impact Statement on Management of Commercially Generated Radioactive Waste," DOE/EIS-0046F (1980), and in the "Final Environmental Impact Statement for the Waste Isolation Pilot Plant," DOE/EIS-0026 (1980). In addition, Sandia

National Laboratories, under contract to the Department, issued a report on transportation risks, "A Preliminary Cost and Risk Analysis for Transporting Spent Fuel and High-Level Wastes to Candidate Repository Sites," SAND 84-1795 (October 1984). The first two reports consist of multiple volumes with each report in excess of 1200 pages. A copy of each of these reports is being ordered for the Committee. A copy of the SAND report is attached.

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A Preliminary Cost and Risk Analysis for Transporting Spent Fuel and High-Level Wastes to Candidate Repository Sites

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A PRELIMINARY COST AND RISK ANALYSIS FOR TRANSPORTING SPENT FUEL AND HIGH-LEVEL WASTES TO CANDIDATE REPOSITORY SITES

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ABSTRACT

This report discusses the relative costs and risks of transporting nuclear wastes to nine potential candidate repository sites. The calculations performed are consistent with a previous TTC study (Wilmot et al. 1983), but the analyses have been updated to reflect programmatic assumptions about cask capacities and repository capacity in order to be consistent with the environmental assessments written under the Nuclear Waste Policy Act. Because of the complexity of the issues as well as their regional character, costs and risks should be considered to be relative indicators among the various sites.

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I. INTRODUCTION

This report discusses the relative costs and risks of transporting nuclear wastes to nine potential candidate repository sites. Transportation-related impacts of the "once-through" fuel cycle, in which spent fuel (SF) is sent directly to the repository, are evaluated. In addition, the costs and risks of transport to a repository of high-level commercial waste from West Valley (WVHLW) in western New York and defense wastes from the Savannah River Plant (DHLW) in South Carolina are considered. The final decision regarding whether a commercial repository may accept defense high-level wastes is scheduled to be made by the President in early 1985.

In a previous report (Reference 1), the impact of transporting 10-year-old fuel in future-generation casks was analyzed. For the present calculations, currently certificated transportation packaging designs were used rather than probable future-generation cask designs, and all spent fuel was assumed to be 5 years old. Present-generation casks were designed to transport spent fuel less than 1 year from reactor discharge. These casks have thicker shielding than needed for the transport of older spent fuel. However, the large amount of shielding reduces the capacities of the casks. Probable future packagings designed specifically to transport older spent fuel will not require as much shielding and, therefore, will have larger capacities. Because of the small capacities of present-generation packagings, both the number of shipments that are required and the associated nonradiological impacts calculated in this analysis are greater than those reported in Reference 1. Because of the greater shielding required for unaged fuel, the radiological impacts are somewhat reduced. In consequence, although the total number of shipments indicated in this analysis is increased, the total risks reported here are not substantially different from the total risk estimates in Reference 1..

Two transport modes were analyzed--truck and rail. In order to generate bounding estimates of impacts associated with transport by these modes, the two "pure-mode" scenarios were analyzed, i.e. the scenarios in which 100% of all shipments are by truck and 100% of all shipments are by rail, respectively. During actual operations, a combination of modes will most likely be used. For purposes of analysis, however, these bounding conditions represent the heaviest volumes and, hence, the greatest impacts directly attributable to each mode.

II PARAMETERS USED IN THE ANALYSES

Common to both cost and risk assessment is the need to define several parameters including capacity of the repository, shipment modes, numbers of waste shipments, and distances that must be traveled. Various degrees of certainty are associated with these assumptions; major sources of uncertainty are summarized in Section V.

II.1 Repository Capacity

The capacity of the repository was assumed to be 70,000 tHM (tonnes of heavy metal) in spent fuel in order to conform with the requirements of the Nuclear Waste Policy Act (PL 97-425, Section 114 (a)(4)(B)(d)). WVHLW and DHLW have not been included in this total, and, therefore, additional capacity would be required should these wastes be disposed of in a potential candidate repository. The latter assumption was made solely for the purpose of bounding impacts and should not be construed as indicating any future change in repository capacity.

II.2 Transport Modes

Two transport modes were analyzed - truck and rail. In order to generate bounding estimates of impacts associated with transport by these modes, the following two scenarios were analyzed: 100% of all shipments by rail; 100% of all shipments by truck. Each of these cases maximizes the number of potential trips for the mode; in actual operation a combination of rail and truck shipments is likely. Since estimates of radiological and nonradiological impacts are both proportional to the number of shipments, analyses of transport exclusively by truck and exclusively by rail yield estimates that bound the range of impacts that might actually occur under the assumptions used in this study.

II.3 Shipment Numbers

Transportation requirements and shipment numbers were calculated by use of WASTES, a computer code that simulates the movement of spent fuel and nuclear waste from point of generation to final destination (Reference 2). Shipment- handling characteristics at facilities (e.g. at a reactor and a repository) are determined by specifying a number of input parameters. These include loading and unloading rates, capacities of the facilities, characteristics of the spent fuel and nuclear waste, quantities of material requiring shipment, and characteristics of the packagings.

The repository receiving rates defined by year are given in Table 1. Characteristics of spent fuel, WVHLW, and DHLW used in this analysis are summarized in Section IV.2.5. The quantities of spent fuel requiring shipment are derived from the 1984 Spent Fuel

Data Base, which is compiled annually for the DOE by Battelle Pacific Northwest Laboratory from utility responses to a voluntary survey (Reference 3).

Table 1. REPOSITORY RECEIVING RATES

	Years						
	1-3	4	5	6-14	15-27	28	Total
SF tHM/yr	400	900	1800	3000	3000	100	70000
DHLW canister/yr	444	444	444	500			6720
WVHLW canister/yr	60	60	60				300

Data for future projections are being compiled by the Energy Information Agency (EIA); these data were not available for this analysis. In general, the utility-response data are a slight overestimate of spent reactor fuel discharged and, hence, are sufficiently conservative for the purposes of an environmental analysis. Future analyses incorporating the EIA data should reflect a lower generation rate of spent fuel than that used in this report because of changes in the market structure (e.g. reactor shutdowns) and the influence of increased conservatism on power-generation rate estimates.

At this time future packaging designs have not been fully defined. Therefore, characteristics of existing spent-fuel casks were used in this analysis. WVHLW and DHLW were assumed to be shipped in 24x118-in (0.60x3.0-m) canisters. Table 2 summarizes capacities of the reference packagings.

In order to calculate projected spent-fuel transportation requirements, storage capacity at the reactors must be accounted for. The following assumptions were used to evaluate this parameter:

1. The spent-fuel discharge data published in Reference 3.
2. Maintaining a full-core reserve at each reactor storage pool.
3. Maximum licensed expansion of reactor storage pools.
4. Planned transshipments of spent fuel, as identified in Reference 3.
5. Reactors decommissioned at the end of their commercial life with all remaining fuel assemblies shipped over a 5-year period.
6. Shipment of spent fuel assemblies stored at West Valley during the first 5 years of repository operation.

Because all shipping casks are assumed to be fully loaded and because of the relative volumes of waste contained in each cask type, the shipping schedule is affected by the choice of transport mode. The total numbers of shipments calculated for the reactors associated with each reactor centroid are shown in Table 3 for each transport mode. The method of centroid assignment is discussed below. This calculation does not take into account whether a reactor has access to the rail option.

II.4 Transport Distances

A. Origin Points

All spent nuclear fuel was assumed to be shipped in unconsolidated assemblies directly from the reactors to the potential candidate repository sites. No consolidation was assumed to occur at the reactor, and no consolidation processing or packaging was assumed to take place between the reactors and the potential candidate repository sites. WVHLW and DHLW were also assumed to be shipped directly to the repository. These assumptions effectively maximize the number of shipments, and, thus, are suitable for the purpose of establishing realistic upper bounds for

Table 2. REFERENCE CASK CAPACITIES

Waste	Container	Truck	Rail
SF-PWR*	Assemblies	1	7
SF-BWR**	Assemblies	2	18
DHLW	Canister	1	5
WVHLW	Canister	1	7

---

* PWR = Pressurized Water Reactor
**BWR = Boiling Water Reactor

Table 3. NUMBER OF SHIPMENTS REQUIRED

Waste Type	Origin	100% Shipments by Rail	100% Shipments by Truck
Spent Fuel			
	IN	354	2473
	OH	993	8241
	MI	1087	7947
	TX	764	5310
	NJ	2458	20,860
	NY	1106	9495
	MA	2152	14,601
	MN	642	5620
	IA	384	3309
	IL	3662	26,501
	WI	400	3167
	TN	2071	16,367
	NC	1634	13,162
	GA	773	6115
	FL	605	4315
	VA	445	3113
	LA	1011	8177
	KS	122	852
	Southern CA	841	5875
	Northern CA	530	4264
	WA	431	3465
Total SF		22,465	173,229
DHLW	Savannah Riv.,GA	1344	6720
WVHLW	West Valley,NY	43	300

environmental analysis. Actual shipment quantities, however, may be lower than the estimates used here because some fraction of the spent fuel inventory may be consolidated.

For the risk analysis, detailed truck and rail routes were not generated from each individual reactor site. Instead, a number of reactor centroids were defined, and transportation distances were calculated from the centroids to the appropriate destinations. All of the reactors in a particular North American Electric Reliability Council (NERC) region (Reference 4) were identified. The NERC region was then divided into subregions according to the geographic locations of the reactors. Once the reactors were identified, the geographic centroid was calculated from the latitude and longitude of each unit within the subregion.

B. Destination Points

Several of the potential candidate repository sites are closely clustered. Cypress Creek Dome and Richton Dome in Mississippi, Deaf Smith County and Swisher County sites in Texas, and Davis Canyon and Lavender Canyon sites in Utah, respectively form three such pairs of sites. Each of these pairs has been treated as a single location for the purpose of distance calculation. Thus, the following six destination points have been used in this analysis.

1. A point in the Gulf Interior Region (GIR) near the Cypress Creek and Richton sites.
2. The Vacherie Dome site in Louisiana, which is also in the GIR, has been treated as a distinct destination point because it is too far from the other GIR sites to be included in the site cluster.

3. A point in the Permian Basin near the Deaf Smith County and Swisher County sites.
4. A point in the Paradox Basin near the Davis Canyon and Lavender Canyon sites.
5. The Yucca Mountain site in Nevada.
6. The Hanford Reservation site in Washington State.

C. Calculational Methods

Estimated distances used for the analysis were tabulated by the highway and rail routing models HIGHWAY (Reference 5) and INTERLINE (Reference 6), respectively (Tables 4 and 5). The HIGHWAY model is designed to simulate routes on the highway system in the United States. The data base includes all interstates, most U.S. highways, and many roads with state, county, and local classifications. It represents approximately 240,000 miles of roadway. In the HIGHWAY and INTERLINE codes, several routing options may be selected. However, to derive possible routes for this analysis, (1) truck routes that used the interstate highway system exclusively (except for routes from the interstate to the repository site) and (2) rail routes normally used for general commerce were developed. No constraints associated with possible state or local restrictions on the shipment of radioactive materials were included in the routing criteria.

The INTERLINE model is designed to simulate routing on the railroad system. Originally compiled in 1974 by the Federal Railroad Administration, the data base has since been extensively reworked to reflect company mergers and line abandonments. The rail network is separated into 95 distinct subnetworks to simulate actual routing practices. As with the truck-routing model, links, intersections, and transfer points can be blocked to permit analysis of track closures and routing

Table 4. ESTIMATED HIGHWAY DISTANCES*

Origin	Repository Site Vacherie km(mi)	GIR[1] km(mi)	Permian[2] km(mi)	Paradox[3] km(mi)	Yucca Mt km(mi)	Hanford km(mi)
Reactor Centroid State						
IN	1160(721)	1001(622)	1772(1101)	2538(1577)	3228(2006)	3574(2221)
OH	1628(1012)	1469(913)	2166(1346)	2876(1787)	3566(2216)	3727(2316)
MI	1603(996)	1584(984)	2076(1290)	2625(1631)	3315(2060)	3476(2160
TX	404(251)	896(557)	869(540)	1823(1133)	2316(1439)	3289(2044)
NJ	2113(1313)	1809(1124)	2760(1715)	3510(2181)	4200(2610)	4408(2739)
NY	2322(1443)	2007(1247)	2895(1799)	3544(2202)	4234(2631)	4395(2731)
MA	2542(1580)	2234(1388)	3177(1974)	3854(2395)	4706(2824)	4545(2924)
MN	1607(999)	1783(1108)	1683(1046)	2168(1347)	2858(1776)	2562(1592)
IA	1178(732)	487(928)	1157(719)	1635(1016)	2326(1445)	2544(1581)
IL	1233(766)	1302(809)	1687(1048)	2185(1358)	2876(1787)	3095(1923)
WI	1598(993)	1638(1018)	2049(1273)	2512(1561)	3203(1990)	2989(1857)
TN	936(582)	624(388)	1732(1076)	2713(1686)	3206(1992)	3748(2329)
NC	1356(843)	1043(648)	2321(1442)	3302(2052)	3795(2358)	4329(2690)
GA	1027(638)	716(445)	2039(1267)	3021(1877)	3513(2183)	4244(2637)
FL	1566(973)	1091(678)	2575(1600)	3559(2210)	4049(2516)	4365(3023)
VA	1749(1087)	1461(908)	2586(1607)	3375(2097)	4060(2523)	4411(2741)
LA	113(70)	367(228)	1125(699)	2107(1309)	2599(1615)	3508(2180)
KS	716(445)	1141(709)	790(491)	1529(950)	2264(1407)	2845(1768)
So. CA	2468(1534)	2935(1824)	1547(961)	1064(661)	595(370)	1928(1198)
No. CA	3154(1960)	3632(2257)	2213(1375)	1580(982)	970(603)	1188(738)
WA	3529(2193)	3948(2453)	2541(1579)	1521(976)	1608(999)	137(85)
W. Valley, NY	1966(1222)	1806(1122)	2509(1559)	3158(1962)	3853(2394)	4009(2491)
Savannah Riv.	1199(745)	892(554)	2176(1352)	3158(1962)	3645(2265)	4284(2662)

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*One-way distances; total distance traveled by reusable packaging is twice the value presented here.

1. Repository locations within the GIR are Cypress Creek Dome and Richton Dome sites.
2. Repository locations within the Permian Basin are Deaf Smith County and Swisher County sites.
3. Repository locations within the Paradox Basin are Davis Canyon and Lavender Canyon sites.

Table 5. ESTIMATED RAIL DISTANCES*

	Repository Site					
Origin	Vacherie km(mi)	GIR[1] km(mi)	Permian[2] km(mi)	Paradox[3] km(mi)	Yucca Mt km(mi)	Hanford km(mi)
Reactor Centroid State						
IN	1267(788)	1289(801)	2231(1386)	2638(1639)	3447(2142)	3788(2354)
OH	2165(1345)	1608(999)	2182(1356)	2829(1758)	3769(2342)	3811(2368)
MI	1773(1102)	1746(1085)	2182(1356)	2742(1704)	3570(2218)	3724(2314)
TX	468(291)	993(617)	1025(637)	2750(1709)	2926(1818)	4057(2521)
NJ	2372(1474)	2348(1465)	2953(1835)	3600(2237)	4519(2808)	4582(2847)
NY	2847(1769)	2403(1493)	2869(1783)	3632(2257)	4464(2774)	4806(2986)
MA	2712(1685)	2699(1677)	3317(2061)	3888(2416)	4859(3019)	4870(3026)
MN	2266(1409)	1899(1180)	2288(1422)	2182(1356)	2937(1825)	2657(1651)
IA	1281(796)	1693(1052)	1259(782)	1535(954)	2412(1499)	2678(1726)
IL	1571(976)	1487(924)	1548(962)	2111(1312)	2989(1857)	3233(2009)
WI	2040(1268)	1555(966)	2052(1275)	2472(1536)	3304(2053)	3645(2265)
TN	1013(630)	1057(657)	2540(1578)	2828((1757)	3636(2259)	2977(2471)
NC	1846(1148)	1184(736)	2562(1592)	3618(2248)	4426(2750)	4769(2962)
GA	1407(875)	745(463)	2345(1457)	3446(2141)	4253(2643)	4595(2855)
FL	1886(1172)	1225(761)	2931(1821)	4134(2569)	4942(3071)	5283(3283)
VA	2283(1419)	1524(947)	2873(1785)	3906(2427)	4714(2929)	5055([illegible]
LA	122(76)	414(257)	1415(879)	2672(1660)	3639(2261)	3980(2473)
KS	677(421)	1226(762)	872(542)	1859(1155)	2826(1756)	3167(1968)
So. CA	2833(1761)	3520(2187)	1746(1085)	2435(1513)	571(355)	2364(1469)
No. CA	3734(2321)	4421(2747)	2647(1645)	1592(989)	1138(707)	1521(945)
WA	4047(2515)	4459(2771)	3272(2033)	1769(1099)	2081(1293)	192(119)
W. Valley, NY	2306(1433)	2327(1446)	2712(1685)	3372(2095)	4303(2674)	4300(2672)
Barnwell, SC	1912(1188)	1250(777)	2544(1581)	3710(2305)	4575(2843)	4749(2951)

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*One-way distances; total distance traveled by reusable packaging is twice the value presented here.

1. Repository locations within the GIR are Cypress Creek Dome and Richton Dome sites.
2. Repository locations within the Permian Basin are Deaf Smith County and Swisher County sites.
3. Repository locations within the Paradox Basin are Davis Canyon and Lavender Canyon sites.

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restrictions. However, no routing constraints were imposed in this analysis; all shipments were assumed to travel as general freight.

The node in the routing models that was nearest to each previously calculated geograpic centroid and was included in the truck and rail data bases was then selected as the centroid for route-estimation purposes. Actual origins were used for the West Valley and Savannah River shipments.

Routes calculated for each of the centroid-destination pairs were then subdivided according to the population densities (rural, suburban, and urban) along the routes as detailed in Section IV.2.3. Total shipment-kilometers are derived from the numbers of shipments multiplied by the centroid-destination distances.

III COST ANALYSIS

III.1 Introduction

For each waste type, the total relative cost of transport (excluding site-specific fixed-facility costs such as the costs of access roads, rail lines, and storage and handling facilities), are defined as the sum of:

- Capital Costs
- Maintenance Costs
- Shipping Costs.

In practical terms these costs are interrelated; failure to periodically maintain a railcar, for example, could result in a delay on route for maintenance, which would increase trip time and handling and maintenance costs. For purposes of comparison, shipping costs used were based on published tariffs where available or on conservative estimates when tariffs were not available. With the rapid introduction of rate deregulation (e.g. for rail since the 1980 Staggers Act), as well as decreased constraints on mergers and acquisitions, the importance of negotiated contracts will grow. In this event, the actual shipping charge negotiated will depend on service conditions, operating constraints, and reporting requirements as well as the level of competition for the anticipated shipments. Actual shipping charges or contract rates will be determined during contract negotiations between the DOE or its representatives and the carriers and suppliers.

Further, for simplicity of analysis, the generation of relative cost indicators has been expressed in 1984 constant dollars. Not all components of the economy grow (in real terms) at equal rates, and accordingly the growth over time in cost indicators for the three categories of costs will not necessarily be the same. Changes in fuel costs and interest rates have affected fabrication and manufacturing processes, which in turn affect capital costs. Similarly, operating costs in such industries as transportation services are greatly affected by changes in fuel costs, particularly diesel fuel costs. These changes in fuel costs, as well as other operating costs, influence current and anticipated shipping charges. Appendix A contains a detailed examination of factors affecting rail costs to serve as an example of the complexity of making precise cost estimates. For the purposes of this preliminary analysis, however, only the relative costs among potential candidate repository sites are of basic importance.

III.2 Assumptions for Cost Analysis

The total relative transportation costs are the sum of the tranportation costs for each waste type; they are distinct for each potential candidate repository site or site pair. Transportation costs depend directly on the total quantity of waste requiring shipment, which is distributed on a yearly basis between each origin-destination pair for the lifetime of a repository.

Average speeds, turnaround times, and availability of packagings, must also be estimated in order to calculate a total transportation-package requirement for each waste type. All truck shipments were assumed to travel at an average speed of 56 km/h (35 mph). The average rail speed varies from 5 km/h (approximately 3 mph) for short hauls to 19 km/h (approximately 12 mph) for cross-country shipments. These average speeds include stop time. Additional time is required for loading casks at the waste generator/storage site and for unloading casks at the repository. A total loading-unloading time of 5 days per round trip was assumed for rail packages, and 3 days for a truck package. Transport packages were assumed to be available 300 days per year.

III.3 Capital Costs

Capital costs are defined as the costs of the transportation packaging and the trailers and railcars. Estimates are given in Table 6. These estimates do not include the costs of construction of fixed facilities such as access roads and rail lines to the repository site.

Table 6. TRANSPORTATION PACKAGE CAPITAL COSTS
($ x 10^6)
(including trailer or railcar)

Waste Type	Transportation Mode Truck	Rail
SF	1.1	5.3
WVHLW	1.1	1.8
DHLW	1.1	1.8

Transportation packagings were assumed to be licensed with an estimated lifetime of 15 years. Hence, the spent-fuel packagings must be replaced once during the lifetime of the first repository.

Spent fuel was assumed to arrive at the rate defined in Table 1. The WASTES model was then used to derive the number of packagings required (by year) from the spent-fuel flows defined in the previous section. This number fluctutates to reflect yearly changes in total cask requirements, which is highly dependent on the total mileage required to transport wastes in that year. To determine the spent-fuel packaging requirements for the first repository, the total number of packagings identified by use of the model was further processed to reflect an estimated 300 tHM of repository lag storage. "Lag storage" capacity is the maximum amount of waste awaiting final disposal that can be contained in the surface facilities of a repository. The approach outlined above allows for early shipment of some wastes, which in turn reduces peak packaging requirements in subsequent years. The assumption that all transport packagings are full when shipped is also consistent with this approach. The number of packagings required to handle the steady-state annual waste flow must be doubled because the number of years during which the repository will be accepting waste at that rate is nearly twice the assumed 15-year lifetime of the the packagings. For comparison, the number of packagings that would be required without lag storage was also calculated, and these data are summarized in Table 7.

The total number of packagings required for each waste type are given in Table 8. The costs per packaging, multiplied by these packaging requirements, gives the total capital cost for each waste type, by site, as shown in Table 9. The total capital cost is the sum of the capital costs of transporting spent fuel, WVHLW, and DHLW to each potential candidate repository site (Table 9).

III.4 Maintenance Costs

The number of packagings required per year was obtained by use of the WASTES code. These values, along with the maintenance-and-licensing constants given in Table 10, were used to obtain the total maintenance cost by waste type shown in Table 11. Because this cost varies with the number of packagings required per year, the maintenance costs vary from site to site.

III.5 Shipping Costs

In this preliminary analysis relative shipping costs were determined for the given waste types and calculated shipment distances. The shipping rates used for this analysis were based upon either (1) evaluations of published tariffs or (2) conservative estimates of rates when tariffs were unavailable. The loaded and empty packaging weights used for this analysis are summarized in Table 12. The model, which includes these weights, the tariff studies, and shipment distances, uses a cost-correlation equation to calculate shipping costs. Table 13 summarizes these costs by waste type and shipment destination. Total relative shipping costs for each of the scenarios were calculated as previously discussed.

III.6 Summary of Total Transportation Costs

Table 14 gives the total transportation-related costs by major cost category. This table shows the influence of distance on total cost for both modes of transport. Total costs are the lowest for the easternmost (GIR) sites and the greatest for the westernmost (Hanford) site. Shipping costs for truck transport appear to vary almost linearly with distance, while costs for rail transport are affected by regional cost differences and transfers between operating carriers and, therefore, do not show a strictly linear relationship with distance travelled.

Table 7. TOTAL SPENT FUEL TRANSPORTATION PACKAGING REQUIREMENTS BY MODE

	REPOSITORY					
MODE	GIR	VACHERIE	PERMIAN	PARADOX	YUCCA MT.	HANFORD
100% TRUCK						
W Lag Storage	268	273	311	347	393	408
W/O Lag Storage	272	280	318	356	403	418
100% RAIL						
W Lag Storage	159	160	167	188	206	216
W/O Lag Storage	160	162	169	190	209	220

Table 8. TOTAL TRANSPORTATON PACKAGING REQUIREMENTS BY WASTE TYPE AND MODE

	REPOSITORY					
Mode/ Waste Type	GIR	VACHERIE	PERMIAN	PARADOX	YUCCA MT	HANFORD
100% Truck						
SF	268	273	311	347	393	408
DHLW	8	9	12	14	16	17
WVHLW	2	2	2	2	2	2
100% Rail						
SF	159	160	167	188	206	216
DHLW	6	9	9	10	12	13
WVHLW	1	1	1	1	1	1

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Table 9. CAPITAL COST BY WASTE TYPE ($M) AND MODE

MODE/ WASTE TYPE	REPOSITORY					
	GIR	VACHERIE	PERMIAN	PARADOX	YUCCA MT	HANFORD
TRUCK						
SF	295	300	342	382	432	449
DHLW	9	10	13	16	18	19
WVHLW	2	2	2	2	2	2
TOTAL	306	312	357	399	452	470
RAIL						
SF	843	848	882	996	1092	1145
DHLW	11	16	16	18	22	23
WVHLW	2	2	2	2	2	2
TOTAL	856	866	900	1016	1116	1170

Table 10. TRANSPORTATION PACKAGE MAINTENANCE COSTS PER YEAR ($\$10^6$/package-yr)

Waste Type	Transportation Mode	
	Truck	Rail
SF	0.075	0.125
WVHLW	0.06	0.09
DHLW	0.06	0.09

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Table 11. MAINTENANCE COSTS BY WASTE TYPE ($M)

MODE/ WASTE TYPE	REPOSITORY GIR	VACHERIE	PERMIAN	PARADOX	YUCCA MT	HANFORD
TRUCK						
SF	240	246	281	314	356	369
DHLW	6	7	9	11	13	14
WVHLW	1	1	1	1	1	1
TOTAL	247	254	291	326	370	384
RAIL						
SF	238	240	252	284	311	327
DHLW	8	11	11	12	14	15
WVHLW	1	1	1	1	1	1
TOTAL	247	252	264	297	326	343

Table 12. SUMMARY OF LOADED AND EMPTY PACKAGING WEIGHTS (average packaging weights)

	TRUCK				RAIL			
	Loaded		Empty		Loaded		Empty	
	kg	(lb)	kg	(lb)	kg	(lb)	kg	(lb)
SF	22 200	(49 000)	22 114	(48 650)	90 700	(200 000)	76 955	(169 300)
WVHLW	22 700	(50 000)	20 600	(45 490)	90 700	(200 000)	75 000	(165 350)
DHLW	22 700	(50 000)	20 600	(45 490)	90 700	(200 000)	80 500	(177 450)

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Table 13. TOTAL SHIPPING COSTS ($M)

MODE/ WASTE TYPE	REPOSITORY					
	GIR	VACHERIE	PERMIAN	PARADOX	YUCCA MT	HANFORD
TRUCK						
SF	1056	1112	1425	1761	2154	2317
DHLW	21	27	48	65	81	91
WVHLW	2	2	3	3	4	4
TOTAL	1079	1142	1476	1829	2239	2412
RAIL						
SF	767	797	950	1066	1204	1271
DHLW	30	40	55	66	76	82
WVHLW	2	2	2	2	2	2
TOTAL	799	839	1007	1134	1282	1355

Table 14. TRANSPORTATION COST SUMMARY BY MAJOR COST CATEGORY ($M)

MODE/COST CATEGORY	REPOSITORY					
	GIR	VACHERIE	PERMIAN	PARADOX	YUCCA MT	HANFORD
100% TRUCK						
Capital	306	312	357	399	452	470
Maintenance	247	254	291	326	370	384
Shipping	1079	1142	1476	1829	2239	2412
TOTAL	1632	1708	2124	2554	3061	3266
100% RAIL						
Capital	856	866	900	1016	1116	1170
Maintenance	247	252	264	297	326	343
Shipping	799	839	1007	1134	1282	1355
TOTAL	1902	1957	2071	2447	2724	2868

IV RISK ANALYSIS

IV.1 Categories of Risk

In order to evaluate the overall risk for each transport mode and waste type, a number of component risks must be evaluated. The two major categories of risk are, 1) risk associated with accidents, and 2) risk associated with transport when the shipment proceeds without incident (i.e. normal transport). Each of these components can be evaluated by considering the radiological characteristics of the load (radiological risk) and by considering those risks that result regardless of the radiological characteristics of the load (nonradiological risk).

The normal transport component for radiological risk must include the direct external radiation emitted by the radioactive material package as the shipment passes by. The accident component for radiological risk considers the probability of a shipment being involved in an accident, the response of the package to the statistically specified accident environment, and the consequences of a release if any, of radioactive material from the package. Health effects from pollutants generated by burning diesel fuel to move the shipment are used as a measure of the nonradiological effects of normal transport. Traumatic deaths from traffic accidents are evaluated and included as a measure of nonradiological effects of accidents. Nonfatal injuries and damage costs are not included in the total impact estimates, although nonfatal injury rates are given in Table 19.

A further subcategorization of risk can be made according to the population groups affected. For this analysis, a distinction was made, when possible, between people exposed as a result of their occupation and those exposed on a random basis. Persons such as crew members of trains and truck drivers are considered to be occupationally exposed; the public is the nonoccupationally exposed group. When some risks are assessed, occupationally exposed persons may not be readily separable from nonoccupationally exposed persons. Consequently, separate values for occupationally, and nonoccupationally exposed persons are not always available; in such cases a value is given for nonoccupationally exposed persons.

A distinction can be made between certain categories of risk. The health effects associated with nonradiological impacts of accidents are estimates of immediate, traumatic deaths; the health effects associated with radiological exposure, however, are estimates of latent cancer fatalities (LCFs). While estimates of both nonradiological and radiological accident fatalities have their basis in statistical projections, the former are immediate and identifiable with the accident occurrence. These occur at some frequency for every million kilometers of shipment. LCFs, on the other hand, would occur only after a 20 to 30 year latency period subsequent to exposure and are related to the radioactive nature of the cargo.

All results from accidents involving a radioactive material release are given in terms of expected fatalities because risk is defined as the product of the consequence of an event times the likelihood of its occurrence. Consequences of a number of accidents of varying severity are evaluated and then multiplied by their respective probabilities of occurrence. The sum of the products is the radiological component of accident-related risks for the lifetime of the repository.

IV.2 Methods

For this evaluation, unit risk factors were calculated for all radiological and nonradiological risks. Unit risk factor is defined here as the increment of risk associated with a unit of distance traveled. The methods for calculating radiological and nonradiological unit risk factors are described in Section IV.2.1 and IV.2.2, respectively. Unit risk factors were calculated for each of three population densities: urban, suburban, and rural. Fractions of travel in each of the population zones were calculated by the method discussed in Section IV.2.3.

The unit risk factors are combined with three other terms to give a total risk figure; those terms are: the number of shipments, the distance traveled per shipment, and the fractions of travel in the three population zones. The products were summed according to the following formula to obtain a total risk estimate for each shipping scenario.

$$\sum_i \sum_j \sum_k \Big[(\text{unit risk factors})_{ijk} \times (\text{no. of shipments})_j \times (\text{miles per shipment})_j \times (\%\text{travel in population zone})_{ij} \Big]$$

= Total Impact, where $\sum_i$ is over populations zones, $\sum_j$ is over waste types, and $\sum_k$ is over unit risk factors.

IV.2.1 Radiological Unit Risk Factors

The radiological unit risk factors were calculated by use of a computer code, RADTRAN II, which combines the large set of parameters necessary to calculate radiological impacts. RADTRAN II has been documented previously (References 7 and 8) and is discussed further in Section IV.2.5.

A. Normal Transport-Occupational Exposure.

This factor was calculated by the crew model, which requires as input for the truck-mode scenario: number of crewmen, distance to the crew compartment, transport index (i.e. an exposure-rate term defined by regulation), package dimensions, and speed of travel. Rail-crew doses were not calculated because of the large amounts of shielding and the large source-to-crew distances. However, Department of Transportation regulations require railcars carrying hazardous materials to be inspected at interchanges. Therefore, the dose to an inspector was modeled.

B. Normal Transport-Nonoccupational Exposure.

This factor was calculated by combining impacts to persons at places where a shipment stops, to persons in vehicles sharing the transport link with a shipment, and to persons within 800 m of the transport link while a shipment is moving. Impacts on pedestrians and persons in buildings are included in the latter.

Average numbers of persons and their distances from the shipment are included in the stops model. The number of times a shipment stops during transit is important to the total risk calculation. The stop-time values used for the truck mode have been obtained by documenting many shipments of radioactive material. The value for the rail mode was calculated from the following assumptions: 1) rail shipments average 9.7 kph when stop time is included; 2) when a train is moving it averages 24 kph, 40 kph, and 64 kph in urban, suburban, and rural areas, respectively. The stop-time values used here are 0.011 h/km for truck transport and 0.086 h/km for rail transport. Stop time is included in the average speed estimates and is proportional to the number of miles travelled, although stops are, in fact, an occasional event. For this reason, the importance of stops will be overemphasized if the unit risk factor is applied to short trip segments (i.e. distances less than 500 km).

C. Accident-Nonoccupational and Occupational Exposure.

The probability that an accident releasing radioactive material will occur is formulated in terms of the expected number of accidents in each of six severity categories. Package response, which determines whether release of material or loss of shielding will occur, is related to the severity class for each type of package used. Health effects resulting from the release of radionuclides to the environment are evaluated for several pathways: groundshine, cloudshine, and inhalation. The ingestion pathway is not included because Federal, state, and local authorities are assumed to intervene by impounding crops and cleaning up contaminated soil. Released material is assumed to disperse according to Gaussian diffusion models, which predict downwind airborne concentrations and ground deposition. Standard dosimetric conversion factors convert downwind concentrations to expected organ doses. External exposure from ground contamination was estimated from an infinite-plane-source model.

D. Dose Conversion Factor

The ICRP 26 equivalent whole-body dose conversion factor (Reference 9), which is used in this analysis, is 2 x 10^{-4} LCFs per person-rem exposure.

IV.2.2 Nonradiological Unit Risk Factors

Statistical data from available references were used to compile these unit risk factors. Those which reflect the effects of pollutants generated during normal transport were taken from Reference 10. The values specified for these factors are only for transport in an urban population zone. The overall (occupational and nonoccupational) traumatic injury and fatality rates for truck transport are those specified in Reference 11. The values used here were those specifically evaluated for truck and trailer rigs similar to those that would be used to transport spent fuel, DHLW, and WVHLW to a repository. In order to separate the occupational (drivers) and nonoccupational values, the data in Reference 12 were used. The unit risk factors for rail transport were calculated from railcar miles given in Reference 13 and fatalities and injuries recorded in Reference 14.

IV.2.3 Fractions of Travel in Population Zones

Population-density estimates based on 1980 census data were calculated for a 3'x3' (3 minutes is approximately 5.6 km) latitude-longitude grid system (376,000 cells) across the United States (Reference 1). The population-density data were then contoured to generate specific population densities. Intersections of the transportations routes with the population-density contour lines were determined, and the segments of a route that fell within each of the population-density zones used in RADTRAN II were calculated. Those segments were accumulated, and percentages of travel in each zone were calculated. Average percentages for each repository location are shown in Table 15.

Table 15. PERCENT OF TRAVEL IN VARIOUS POPULATION DENSITIES

MODE/DESTINATION	POPULATION ZONE*		
	Rural	Suburban	Urban
TRUCK			
Vacherie	74.5	24.28	1.2
GIH	74.1	24.8	1.1
Permian	76.8	22.1	1.1
Paradox	82.4	16.5	1.1
Yucca Mountain	83.7	15.2	1.1
Hanford	81.9	17.2	0.9
RAIL			
Vacherie	75.8	22.7	1.5
GIR	75.3	23.1	1.6
Permian	79.3	19.5	1.3
Paradox	81.8	16.8	1.4
Yucca Mountain	83.1	15.5	1.4
Hanford	83.2	15.7	1.1

---

* Rural corresponds to 6 persons/km^2 (mean density);
Suburban corresponds to 719 persons/km^2 (mean density);
Urban corresponds to 3861 people/km^2 (mean density)

IV.2.4 Special Calculation for an Individual Receiving a Maximum Radiological Exposure

The hypothetical maximum exposure to an individual who lives beside a railroad track or highway was calculated according to the equation given below, which embodies the following assumptions. (1) The maximum individual lives 30 m from a rail line or highway. (2) Every shipment passes by at 24 km/h. (3) The individual is exposed to every shipment i.e. to 180,249 truck shipments or to 23,852 rail shipments. The cumulative dose received by this hypothetical individual is the maximum nonoccupational dose that could be received from normal transport of wastes to the repository.

For each material the dose in rem is found from the expression,

$$DR(x) = \frac{2.0 \times 10^{-6} \cdot I(x) \cdot PPS \cdot SPY \cdot K}{V}$$

where,

$$I(x) = \int_{x}^{\infty} \frac{e^{-ur} B(r)\,dr}{r(r^2-x^2)^{1/2}}$$

and,

PPS = Number of packages/shipment

SPY = Total number of shipments

K = dose rate factor (mrem·m^2/hr) = (TI)(1+d/2)^2
where TI = Transport Index

x = perpendicular distance of the individual from the shipment path (m)

V = average velocity (km/hr) of the shipment passing the point

r = distance of the individual from the passing vehicle (m)

B(r) = Berger buildup factor for exposure increase. As a photon beam travels toward a target, some of the energy is attenuated by collisions with air molecules. This is expressed by the exponential decay function, e^{-ur}. Some of the scattered energy will be rescattered back toward the target. The Berger buildup factor accounts for this and is written as:
B(r) = (0.0006 r)+1.

u = the absorption coefficient for air (3.87 x 10^{-3} m^{-1})

When the expression for B(r) is substituted into the integral (I(x), the resulting equation can be written in terms of the zeroth order modified Bessel function and its first integral:

$$I(x) = 0.00006\ K_0(ux) + \frac{1}{x}\int_{ux}^{\infty} K_0(w)\,dw$$

IV.2.5 Use of RADTRAN II

RADTRAN II requires significant amounts of data and is designed so that much of the data is contained in the code (default data). The default data are discussed in Reference 7. The nondefault data needed for this analysis, presented in Table 16 (truck mode) and Table 17 (rail mode), are discussed below.

The number of packages per shipment was assumed to be 1 for all shipments. The transport index (TI), which is defined by regulation as the dose in millirems per hour at one meter from the package, has been calculated for the package types used in this analysis.

For the purpose of this analysis only pressurized-water reactor (PWR) waste was analyzed, and all spent fuel shipments were assumed to have the characteristics of PWR spent fuel. PWR spent fuel was assumed to be 3.2% enriched with a burnup of 32,717 MWd/tHM at a power of 38.4 MW(t)/tHM. The spent fuel was assumed to contain 0.46 tHM/fuel assembly, and fuel age was assumed to be 5 years out of reactor. Isotopes contributing 99.9% of the relative hazard were determined (Reference 1); they are listed in Tables 16 and 17. Because accident parameters for spent-fuel shipments by truck have been defined (References 15 and 16), nondefault parameters for accident and release data were used as shown in Table 18. Default values were used in all other cases

Accident rates for truck transport were developed from actual truck accident data for shipment of all goods. The overall rate was given in Reference 17 and unfolded to give accident rates by population-density zones (Reference 8). The fractions of accidents that are of a particular accident

TABLE 16. DATA FOR RADTRAN II (TRUCK)

PARAMETER	WASTE TYPE SPENT FUEL	DHLW	WVHLW
1 Packages/shipment	1	1	1
2 Transport Index(TI)	1.47	20	20
3 Package Dimension (m)	5.2	4.6	4.6
4 Curie/package*	1.1×10^5	1.7×10^5	1.1×10^5
5 Photon energy/disintegration (MeV)	**	.25	0.34
6 Velocity of deposition(m/s)***	0.01	0.01	0.01
7 Cloudshine dose factor (mrem-cm^3)/uCi-yr)	**	0.038	0.056
8 Dispersability category	****	2	2
9 Half life (days)	**	10000	12000
10 Dose conversion factor(rem/Ci)	**	1.8×10^6	7.8×10^5

---

* Reflects contribution of those isotopes providing 99.9% of radiological hazard

** (see table below)

	PARAMETER NO. 5	7	9	10	4
Co60	2.5	0.45	1910	2.2×10^5	24
Sr90	0	1.7×10^{-8}	10 000	1.1×10^6	26 000
Ru106	0.19	0.035	368	5.0×10^5	250
Eu155	1.2	0.22	5800	1.8×10^5	2100
Cs	0.68	0.11	11 000	3.7×10^4	40 000
Pu	0.06	3.2×10^{-4}	790 000	7.7×10^7	39 000
Kr	0.002	3.9×10^{-4}	3930	0.29	2230

*** Aerosol settling velocity

**** 2 = Immobilized; for spent fuel see Reference 14

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TABLE 17. DATA FOR RADTRAN II (RAIL)

PARAMETER	WASTE TYPE		
	SPENT FUEL	DHLW	WVHLW
1 Packages/shipment	**	**	**
2 Transport Index (TI)	5.4	**	**
3 Package Dimension (m)	**	**	**
4 Curies/Package*	$7.7x10^6$	$8.5x10^5$	$7.7x10^5$
5 Photon energy/disintegration (MeV)	**	**	**
6 Velocity of deposition (m/s)***	**	**	**
7 Cloudshine dose factor (mrem-cm^3)/uCi-yr	**	**	**
8 Dispersability Category	**	**	**
9 Half life (days)	**	**	**
10 Dose conversion factor(rem/Ci)	**	**	**

---

* Reflects contribution of those isotopes providing 99.9% of radiological hazard
Curies/package for Spent Fuel: Co60 = 169; Sr90 = $1.81x10^5$; Ru106 = 1750; Eu155 = $1.46x10^4$; Cs = $2.8x10^5$; Pu = $2.7x10^5$; Kr = $1.6x10^4$

** Same as truck

*** Aerosol settling velocity

TABLE 18. ACCIDENT DATA FOR RADTRAN II (SPENT FUEL)*

Accident Rate	URBAN	SUBURBAN	RURAL
Truck (accidents/km)	4.7×10^{-6}	8.1×10^{-7}	4.0×10^{-8}
Rail (accidents/railcar-km)	1.5×10^{-5}	1.9×10^{-6}	1.0×10^{-7}

	Severity Category					
	1	2	3	4	5	6
Severity Fraction						
Truck						
Urban	0.604	0.395	3.8×10^{-4}	3.8×10^{-7}	2.5×10^{-7}	1.3×10^{-7}
Suburban	0.602	0.394	4.0×10^{-3}	4.0×10^{-6}	3.0×10^{-6}	2.0×10^{-6}
Rural	0.603	0.394	3.0×10^{-3}	3.0×10^{-6}	5.0×10^{-6}	7.0×10^{-6}
Rail						
Urban	0.624	0.375	3.8×10^{-4}	3.8×10^{-7}	2.5×10^{-7}	1.3×10^{-7}
Suburban	0.622	0.374	4.0×10^{-3}	4.0×10^{-6}	3.0×10^{-6}	2.0×10^{-6}
Rural	0.623	0.374	3.0×10^{-3}	3.0×10^{-6}	5.0×10^{-6}	7.0×10^{-6}
Release Fraction						
Co60	0	0	0.012	0.012	0.012	0.012
Kr	0	0	0	0.01	0.1	0.11
Cs	0	0	0	1×10^{-8}	2×10^{-4}	2.8×10^{-4}
Eu,Sr,Pu	0	0	0	1×10^{-8}	5×10^{-8}	5×10^{-8}
Ru	0	0	0	1×10^{-8}	1×10^{-6}	4.2×10^{-5}
Aerosol Fraction						
Co60	0	0	1	1	1	1
Kr	0	0	0	1	1	1
Cs	0	0	0	1	1	1
Sr,Ru,Pu,Eu	0	0	0	1	1	1
Respirable Aerosol						
Co60	0	0	0.05	0.05	0.05	0.05
Kr	0	0	0	1	1	1
Cs	0	0	0	0.05	1	1
Sr,Ru,Pu,Eu	0	0	0	0.05	0.05	0.05

NA - Not applicable

* See Reference 14

severity are given. The remainder of the parameters relate to the amount of material that can be released and subsequently inhaled by the public; they include the amount of material of all sizes that can be released from a package, the fraction of material released that can be entrained as an aerosol, and the fraction of material in aerosol form that is also respirable. These three parameters and the total number of curies in the package are combined to give the fraction of material that can be inhaled.

As was the case for the spent-fuel analysis, some simplifications were made for WVHLW and DHLW. The WVHLW radioisotope inventory is from Reference 18, and the DHLW radioisotope inventory is from Reference 19. Both contain large quantities of radioisotopes. Because the types of isotopes present in both wastes are similar, the data were homogenized and input as though there were only one set of radionuclides in both cases.

IV.2.6 Unit Risk Factor Values

The values for the unit risk factors calculated by RADTRAN II with the data discussed above are listed in Table 19. All radiological unit risk factors are presented in units of person-rem per kilometer. These values relate only to the situations described in the data sets. The nonradiological unit risk factors are presented in units of LCFs per kilometer for pollutants generated during normal transport. These factors are applicable only to transport in urban areas and only to nonoccupationally exposed persons.

TABLE 19. UNIT RISK FACTORS

	TRUCK			RAIL*		
	Rural	Suburban	Urban	Rural	Suburban	Urban
RADIOLOGICAL (person-rem/km**)						
Spent Fuel						
Normal						
Nonoccupational	1.5×10^{-5}	2.4×10^{-5}	3.3×10^{-5}	8.5×10^{-4}	8.7×10^{-4}	8.5×10^{-4}
Occupational	2.5×10^{-6}	5.4×10^{-6}	9.0×10^{-6}	1.5×10^{-7}	1.5×10^{-7}	1.5×10^{-7}
Accident						
Nonoccupational	9.5×10^{-11}	2.9×10^{-7}	5.1×10^{-7}	1.4×10^{-9}	4.1×10^{-6}	9.9×10^{-6}
WVHLW						
Norm						
Nonoccupational	1.3×10^{-4}	2.1×10^{-4}	2.6×10^{-4}	2.1×10^{-3}	2.1×10^{-3}	2.1×10^{-3}
Occupational	2.6×10^{-5}	5.7×10^{-5}	9.6×10^{-5}	4.0×10^{-7}	4.0×10^{-7}	4.0×10^{-7}
Accident						
Nonoccupational	4.7×10^{-10}	7.0×10^{-7}	2.5×10^{-6}	2.0×10^{-9}	4.2×10^{-6}	6.9×10^{-5}
DHLW						
Normal						
Nonoccupational	1.3×10^{-4}	2.1×10^{-4}	2.6×10^{-4}	2.1×10^{-3}	2.1×10^{-3}	2.1×10^{-3}
Occupational	2.6×10^{-5}	5.7×10^{-5}	9.6×10^{-5}	4.0×10^{-7}	4.0×10^{-7}	4.0×10^{-7}
Accident						
Nonoccupational	4.9×10^{-10}	7.4×10^{-7}	2.6×10^{-6}	1.5×10^{-9}	3.2×10^{-6}	5.2×10^{-5}
NONRADIOLOGICAL (for all waste types)						
Normal (LCFs/km)						
Nonoccupational	--	--	1.0×10^{-7}	--	--	1.3×10^{-7}
Accident						
Nonoccupational						
fatalities/km	5.3×10^{-8}	1.3×10^{-8}	7.5×10^{-9}	1.7×10^{-8}	1.7×10^{-8}	1.7×10^{-8}
(injuries/km)	(8.0×10^{-7})	(3.8×10^{-7})	(3.7×10^{-7})	(3.3×10^{-8})	(3.3×10^{-8})	(3.3×10^{-8})
Occupational						
fatalities/km	1.5×10^{-8}	3.7×10^{-9}	2.1×10^{-9}	1.4×10^{-9}	1.4×10^{-9}	1.4×10^{-9}
(injuries/km)	(2.8×10^{-8})	(1.3×10^{-8})	(1.3×10^{-8})	1.9×10^{-7})	(1.9×10^{-7})	1.9×10^{-7})

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* Values for rail are expressed per railcar-kilometer

** To convert to LCFs/km, multiply by the dose conversion factor, 2×10^{-4} LCFs/person-rem.

IV.3 Transportation Risks

Table 20 contains the calculated values for radiological impacts of transporting to each potential candidate repository site or site pair over a 26-year period. Table 21 contains the values for nonradiological impacts of transporting wastes. The results of the radiological and nonradiological risk analyses are shown in summary form in Table 22. This table gives total fatalities expected from all causes for each site or site pair over a 26-year period.

IV.3.1 Individual Exposed to the Maximum Extent

The total cumulative exposure of a hypothetical individual who resides 30 m away from each shipment for the entire period of repository operation is 16 millirem for truck and 6 millirem for rail. The average exposure from natural background radiation in the United States is approximately 100 millirem per year.

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Table 20. RADIOLOGICAL RISKS (Total fatalities)

	REPOSITORY					
MODE/CATEGORY	GIR[1]	VACHERIE	PERMIAN[2]	PARADOX[3]	YUCCA MT	HANFORD
TRUCK						
Normal						
Occupational	0.23	0.20	0.35	0.44	.51	.58
Nonoccupational	1.1	1.0	1.7	2.2	2.6	3.0
Accident						
Nonoccupational	0.005	0.005	0.006	0.006	0.007	0.008
TOTAL	1.3	1.2	2.1	2.7	3.1	3.6
RAIL						
Normal						
Occupational	0.001	0.001	0.002	0.002	0.003	0.003
Nonoccupational	8	7	10	13	17	18
Accident						
Nonoccupational	0.01	0.01	0.01	0.01	0.02	0.02
TOTAL	8	7	10	13	17	18

---

1. GIR sites are Cypress Creek Dome and Richton Dome.
2. Permian Basin sites are Deaf Smith County and Swisher County.
3. Paradox Basin sites are Davis Canyon and Lavender Canyon.

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Table 21. NONRADIOLOGICAL IMPACTS (Total fatalities and injuries)

	REPOSITORY					
MODE/CATEGORY	GIR[1]	VACHERIE	PERMIAN[2]	PARADOX[3]	YUCCA MT	HANFORD
TRUCK						
Normal-LCFs						
Nonoccupational	0.7	0.9	1.0	1.2	1.4	1.2
Accident						
Occupational	6.3	6.7	9.2	13	16	17
Nonoccupational	22	24	33	45	55	60
TOTAL FATALITIES	29	32	43	59	72	78
Accident-Injuries						
Occupational	13	14	18	25	30	33
Nonoccupational	370	388	530	720	870	950
RAIL						
Normal-LCFs						
Nonoccupational	.20	.21	.20	.30	.35	.31
Accident-Fatalities						
Occupational	.12	.12	.16	.20	.25	.26
Nonoccupational	1.4	1.5	1.9	2.4	3.0	3.2
TOTAL FATALITIES	1.7	1.8	2.3	2.9	3.6	3.8
Accident-Injuries						
Occupational	16	17	21	27	33	36
Nonoccupational	2.8	2.9	3.7	4.7	5.8	6.2

---

1. GIR sites are Cypress Creek Dome and Richton Dome.
2. Permian Basin sites are Deaf Smith County and Swisher County.
3. Paradox Basin sites are Davis Canyon and Lavender Canyon.

TABLE 22. TOTAL TRANSPORTATION RISKS

MODE/CATEGORY	REPOSITORY					
	GIR	VACHERIE	PERMIAN	PARADOX	YUCCA MT	HANFORD
TRUCK						
Radiological (LCFs)	1.3	1.2	2.1	2.7	3.1	3.6
Nonradiological (fatalities)	29	32	43	59	72	78
RAIL						
Radiological (LCFs)	8	7	10	13	17	18
Nonradiological (fatalities)	1.7	1.8	2.3	2.9	3.6	3.8

V DISCUSSION

To aid the reader to assess the significance of the effects predicted, the estimates given in this report may be compared with the following. The same models and data as those used in this analysis predict that 117,000 latent cancer fatalities would result in the United States from exposure to natural background radiation during a 26-year shipping period for the repository. In addition, about 65,000 people would die from truck accidents, and 32,000 would die from rail accidents during the same 26-year period.

V.1 Sources of Uncertainty

Moderately large uncertainties are associated with the absolute values of the risks reported here. However, because the same uncertainties are contained in all the results being compared, these data are useful as a means of comparing the potential candidate repository sites. Some of the major sources of uncertainty are discussed below.

A. Capacities of Packagings

A new generation of packagings should be available before operations begin at a repository. However, the designs of future packagings are not fully defined, and the characteristics of existing packagings have been used in this analysis. Because future packagings are expected to have capacities that may be as much as twice that of existing packagings, the total number of shipments needed to transport the same amount of waste in new-generation packagings could be as little as half that used in this analysis. Costs and risks are highly mileage dependent; the estimates given here could, therefore, overestimate the actual costs and risks by nearly a factor of two, depending on the characteristics of the new-generation packaging.

The present generation of casks, which are the basis for this analysis, has been designed to carry fuel that has been out of the reactor for less than one year. However, in this analysis, spent fuel was assumed to be 5 years out of the reactor. This means that the radiation exposures external to the cask are below original design levels allowed by the DOT and NRC regulations. New-generation casks designed for older fuel may present exposure rates that are higher than those used in this analysis, even though they will remain within regulatory limits. As a result, the radiological impact may not decrease in direct proportion to the number of shipments but at some lower rate.

B. Mileage Estimates

Uncertainty is associated with this parameter for two reasons. First, the actual distances over which shipments are transported will differ somewhat from the centroid-to-destination distances used in this analysis. This results in part from the fact that routing codes identify routes that may not be the actual routes determined by the carriers. Second, where a single location has been used to represent a site pair, the actual distance to each member of the pair will differ slightly from the estimate used here.

C. Shipping Costs

Actual shipping charges will be determined during contract negotiations between the DOE and the carriers; they may differ from those used in this analysis, which were derived mainly from published tariffs. An example of the difficulty of estimating these costs is given in Appendix A.

D. Risk Estimates

The majority of the radiological risk is a result of the fact that a shipment stops during transit, whether by truck or by rail. The amount of time spent at stops, the number of persons present, and their distances from the cargo are all important to the estimation of risk. Values for these parameters have moderately large uncertai··ies associated with them and are being continuously refined.

V.2 Summary

The radiological and nonradiological risks calculated in this analysis have distinct uncertainties associated with them. Because the number of parameters involved in calculating radiological risk far exceed the number needed to calculate the nonradiological accident risk, the uncertainty associated with the radiological risk is higher than that associated with the nonradiological risk estimates. Further, most of the parameters used to calculate nonradiological accident risk are based on documented accident reports while often the basis for the radiological and pollutant risk analyses was conservative engineering judgement. As a result, the uncertainty in the calculation of nonradiological accident risks is much lower than the uncertainties associated with other values.

Since the calculations of radiological risk and the pollutant risk use conservative values (i.e. tend to overestimate results), they are likely to be upper limits. These results may be as much as one or two orders of magnitude greater than the actual risks that could be calculated if uncertainties were reduced. On the other hand, the nonradiological accident risks might be expected to vary by no more than a factor of 2 higher or lower.

Continuing risk assessment efforts will emphasize improved definition of input parameters and establish their uncertainties. This will improve reliability of comparative and absolute judgements of risk.

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APPENDIX A

RAIL SHIPPING CHARGES

The following discussion describes in some detail the myriad factors affecting rail shipping charges. This discussion is meant to serve as an example of the complexities underlying the cost-estimation process; many of the factors mentioned here apply to the estimation of truck shipping costs as well.

As is also the case with truck shipment, actual shipping rates will be determined at the time of shipment through negotiation between the shipper's traffic management organization and the carrier. Actual rail shipment costs depend on departure and arrival constraints, wait times, regulatory, accounting, and notification requirements, and other factors affecting the operating characteristics of the vehicles. For rail transport, rates are influenced heavily by operating costs and also by government policies (e.g., on mergers, acquisitions, and abandonments), by carrier pricing policies (e.g., use of contract rates) and by the level of competition for the anticipated movement.

1. Types of Rail Costs: Key rail costs include: labor costs, fuel costs, and equipment costs (cars and locomotive). These costs include "common" and "joint" costs. A common cost is an expense incurred on behalf of two or more services or activities which may be statistically apportioned to each service or activity. Examples include the cost of track maintenance on behalf of freight and passenger service and the cost of placing two freight cars from different shippers at the same unloading point at the same time. A joint cost is an expense incurred as a consequence of another expense resulting from providing one or more services or activities.

Examples include the cost of returning an empty car to the point of origin, following the corresponding loaded movement, and the cost of track maintenance attributable to the operation of trains. The latter illustrates a cost which can sometimes be both joint and common.

Similarly, rail costs include costs which are direct, indirect, variable, and fixed. A direct cost is an attributable, traceable expense incurred in providing a particular service or activity, including a statistical apportionment of joint and common costs where these costs are attributable to the particular service or activity. An indirect cost is an expense which is not directly traceable, but is, in some manner, attributable to one or more services or activities, such as many general and administrative costs. A variable cost is that portion of either a direct or an indirect cost which, over the long run, increases or decreases in response to increases or decreases in traffic volume. A fixed cost is technically the residual expense between the total of either a direct or an indirect cost and its variable component. In economic terms, a fixed cost is a long-run expense unaffected by changes in levels of service or activities.

Since indirect fixed costs are not attributable or traceable to any particular service or activity, the inclusion of such costs in railroad rates is purely a marketing or traffic function. These costs are not a relevant factor in determining attributable costs of performing a service or activity. Direct fixed costs, however, are attributable and are relevant to cost determinations.

2. Factors Affecting Rail Costs: Many national and route-specific factors affect rail costs. These include:

- distance of reactor to repository
- utilization of equipment
- train length and weight
- terminal efficiencies
- equipment ownership
- and the number of railroads participating in the haul.

Because of regional differences among sites, rail costs will vary accordingly.

3. Rail Cost and Rate Increases: Rail costs (and hence rates) will vary as the above factors change over different geographical routes. Similarly, rail costs (and rates) will also change over time as underlying factor economies (fuel, interest rates, etc.) change to meet specified service levels. In the time period 1977-1981 (preceding implementation of 1980 Staggers Rail Act), the national index of all rail costs grew from 100.0 to 161.6 while the national index of all rail rates grew from 100.0 to 150.7. In the same period, however, eastern rail rate averages exceeded southern rail rate averages by 150%, which illustrates regional cost and rate differences for equivalent ton-mile hauls. With the introduction of the Staggers Act, which broadens carrier freedom on contract rates and has new provisions on mergers, acquisitions, and rates, rail-carrier strength and pricing flexibility are expected to grow. As such, rates should vary more than in the past, and should reflect service conditions, volume rates, and other negotiated services in their makeup. Estimates of annual rail rate increases over the next five years vary by 5-12% per annum.

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555

OFFICE OF THE
CHAIRMAN

September 20, 1985

The Honorable Pete V. Domenici, Chairman
Subcommittee on Energy Research and Development
Committee on Energy and Natural Resources
United States Senate
Washington, D.C. 20510

Dear Mr. Chairman:

As requested in your letter of June 27, 1985, the Commission is forwarding written responses to ten questions for the July 11, 1985 hearing record on S.1225, Price-Anderson Act Amendments of 1985.

The Commission appreciated the opportunity to testify before you on June 25, 1985, and trusts that these answers are responsive to your request.

Sincerely,

Thomas M. Roberts
Acting Chairman

Enclosure:
As stated

cc: Sen. Wendell Ford
w/o enclosure

QUESTION 1. DOES NRC HAVE SUFFICIENT DATA ON THE FREQUENCY AND CONSEQUENCES OF REACTOR ACCIDENTS TO BE ABLE TO FORMULATE AN ACTUARIAL ASSESSMENT OF RISK BASED ON THESE DATA?

ANSWER.

WE CANNOT EXPECT TO ACCUMULATE ENOUGH EXPERIENCE WITH THE VERY LOW PROBABILITY, HIGH CONSEQUENCE ACCIDENTS AT NUCLEAR POWER PLANTS TO OBTAIN A PURELY ACTUARIAL ASSESSMENT OF REACTOR RISK. HOWEVER, WE HAVE DEVELOPED ACTUARIAL DATA ON INITIATING EVENTS AND THE CONTRIBUTORY EQUIPMENT FAILURES AND HUMAN ERRORS WHICH, IN CERTAIN MULTIPLE COMBINATIONS, COULD GIVE RISE TO SEVERE REACTOR ACCIDENTS. BY ATTEMPTING TO PREDICT THE CATALOG OF HYPOTHETICAL ACCIDENTS TO WHICH REACTORS MIGHT BE SUBJECT, AND ESTIMATING THE SEVERITY OF THESE SCENARIOS USING MODELS VERIFIED WITH SMALL-SCALE EXPERIMENTS, ONE CAN DEVELOP A PREDICTIVE FRAMEWORK WITHIN WHICH THIS LIMITED ACTUARIAL EXPERIENCE CAN BE TRANSLATED INTO ESTIMATES OF RISK. SUCH SYNTHETIC RISK ASSESSMENTS ARE SUBJECT TO SUBSTANTIAL UNCERTAINTY. THE CATALOG OF HYPOTHETICAL ACCIDENTS MAY BE INCOMPLETE, THE COMMON CAUSE FAILURE MECHANISMS THAT COULD GIVE RISE TO MULTIPLE FAILURES ARE DIFFICULT TO PREDICT, AND THE PHENOMENA IN LARGE-SCALE, SEVERE REACTOR ACCIDENTS IS NOT ENTIRELY UNDERSTOOD. THE ACCURACY OF SYNTHETIC RISK ASSESSMENT IS STEADILY IMPROVING, BUT WE CAN NEVER EXPECT IT TO BECOME AS ACCURATE AS PURELY ACTUARIAL DATA CAN BE FOR THOSE INDUSTRIES WITHIN WHICH THE ACCIDENTS OF INTEREST OCCUR IN SUBSTANTIAL NUMBERS.

QUESTION 2. (A) THE NRC STAFF DID A STUDY OF THE EFFECTS OF $10M, $20M, AND EVEN $50M PREMIUM ASSESSMENTS ON UTILITY CASH-FLOW. CAN YOU TELL US THE RESULTS OF THIS STUDY? AT WHAT POINT IS A RETROSPECTIVE PREMIUM CONSIDERED "EXCESSIVE"?

ANSWER.

THE NRC RECENTLY PUBLISHED A STUDY ENTITLED FINANCIAL ANALYSIS OF POTENTIAL RETROSPECTIVE PREMIUM ASSESSMENTS UNDER THE PRICE-ANDERSON SYSTEM (NUREG-1131, APRIL 1985). THIS STUDY EVALUATED THE EFFECTS OF VARIOUS ANNUAL ASSESSMENTS ON FIVE FINANCIAL INDICATORS OF EACH OF TEN UTILITIES CHOSEN TO PROVIDE A MIX OF SIZE, GENERAL FINANCIAL HEALTH, AND GEOGRAPHIC LOCATION. THE STAFF EVALUATED FINANCIAL DATA FOR THE YEARS 1981 THROUGH 1983 FOR EACH UTILITY FOR THE POTENTIAL EFFECT OF ASSESSMENTS OF $10 MILLION, $20 MILLION, AND $50 MILLION ON (1) EARNINGS PER SHARE, (2) INTEREST COVERAGE, (3) RETURN ON COMMON EQUITY, (4) NET CASH FLOW, AND (5) CASH FLOW PER SHARE.

IT IS DIFFICULT TO DETERMINE THE POINT AT WHICH A RETROSPECTIVE PREMIUM WOULD BECOME EXCESSIVE. THIS IS TRUE FOR SEVERAL REASONS. SOME UTILITIES ARE FINANCIALLY STRONGER THAN OTHER UTILITIES BECAUSE OF EXTERNAL ECONOMIC FACTORS, RATE REGULATORY PHILOSOPHY, OR MANAGEMENT PRACTICES. AS INDICATED IN THE STAFF STUDY, IT IS INTERESTING TO NOTE THAT EVEN WITH AN ASSESSMENT OF $50 MILLION IN 1983, THE STAFF STUDY SHOWED THAT MANY UTILITIES WOULD PERFORM

NEARLY AS WELL OR BETTER, AS MEASURED BY SOME FINANCIAL INDICATORS THAN WITH ONLY A $10 MILLION OR EVEN NO ASSESSMENT IN 1981. THUS, EVEN A $50 MILLION ASSESSMENT IN 1983, ALTHOUGH SEVERE, WOULD NOT HAVE NECESSARILY CAUSED THE DIRE RESULTS PREDICTED BY SOME. IT SHOULD BE NOTED, HOWEVER, THAT $50 MILLION ASSESSMENTS DURING TWO OR MORE YEARS COULD HAVE CONSIDERABLY WORSE EFFECT ON A UTILITY'S FINANCIAL HEALTH.

QUESTION 2. (B) WHAT OTHER ASSESSMENTS ARE MADE OF UTILITIES IN THE EVENT OF A REACTOR ACCIDENT (I.E., PROPERTY AND OTHER INSURANCE PROGRAMS)? HOW MUCH ARE THESE ASSESSMENTS?

ANSWER.

THE NRC IS AWARE OF THREE OTHER INSURANCE PROGRAMS IN WHICH NUCLEAR UTILITIES PARTICIPATE THAT COULD ENTAIL ASSESSMENTS IN THE EVENT OF AN ACCIDENT. UTILITIES PURCHASING $500 MILLION IN PRIMARY ON-SITE PROPERTY DAMAGE INSURANCE FROM NUCLEAR MUTUAL LIMITED (NML)* COULD BE ASSESSED UP TO 10 TIMES THEIR ANNUAL PREMIUMS IN ANY ONE YEAR. BASED ON AN AVERAGE ANNUAL PREMIUM OF $2.5 MILLION, THIS COULD BE $25 MILLION PER YEAR PER SITE. SECOND, UTILITIES PURCHASING EXCESS PROPERTY INSURANCE FROM NUCLEAR ELECTRIC INSURANCE LIMITED-II (NEIL-II) COULD BE ASSESSED UP TO 7.5 TIMES THEIR ANNUAL PREMIUMS. BASED ON AN ANNUAL AVERAGE PREMIUM OF $1.1 MILLION, AN AVERAGE TOTAL OF $8.25 MILLION COULD BE ASSESSED PER YEAR PER SITE. THIRD, UTILITIES BUYING EXTRA EXPENSE INSURANCE FROM NEIL-I COULD BE ASSESSED UP TO 5 TIMES THEIR ANNUAL PREMIUMS. THIS YIELDS A TOTAL ASSESSMENT OF NEARLY $7.6 MILLION BASED ON AN AVERAGE ANNUAL PREMIUM OF $1.514 MILLION.

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* ALTHOUGH NRC REQUIRES ITS COMMERCIAL REACTOR LICENSEES TO BUY FULL PRIMARY PROPERTY COVERAGE (PLUS EXCESS COVERAGE), SUCH INSURANCE IS ALSO OFFERED BY AMERICAN NUCLEAR INSURERS (ANI) AND DOES NOT REQUIRE PAYMENT OF A RETROSPECTIVE PREMIUM.

QUESTION 2(B). (CONTINUED) -2-

IF ALL THESE ASSESSMENTS WERE CALLED, A UTILITY COULD BE SUBJECT TO NEARLY $41 MILLION IN RETROACTIVE ASSESSMENTS IN ADDITION TO WHATEVER RETROSPECTIVE PREMIUMS WERE CALLED UNDER PRICE-ANDERSON. HOWEVER, TWO QUALIFICATIONS TO THIS SITUATION SHOULD BE MENTIONED.

FIRST, IF THESE INSURANCE PROGRAMS USING RETROSPECTIVE ASSESSMENTS CONTINUE TO OPERATE WITHOUT SIGNIFICANT CLAIMS BEING RENDERED AGAINST THEM, THEY WOULD BUILD UP RESERVES TO THE POINT THAT ASSESSMENTS UP TO THE FULL LIMITS OF THE POLICIES WOULD BECOME DECREASINGLY NECESSARY OR LIKELY. SECOND, EVEN IF FULL ASSESSMENTS ARE NECESSARY, IT IS POSSIBLE THAT THEY WOULD NOT BE ASSESSED IMMEDIATELY BUT WOULD RATHER BE TIMED TO COINCIDE WITH A MULTI-YEAR PERIOD OF RECOVERY FROM AN ACCIDENT.

QUESTION 3. UNDER THE CURRENT LAW, HOW WOULD LIABILITY BE ASSIGNED FOR NUCLEAR-RELATED ACTS OF THEFT OR SABOTAGE IF THE NUCLEAR MATERIAL COULD NOT BE TRACED TO A SPECIFIC NRC LICENSEE OR CONTRACTOR?

ANSER.

PRIOR TO THE LAST AMENDMENT TO AND EXTENSION OF THE PRICE-ANDERSON ACT, BY PUBLIC LAW 94-197 ENACTED DECEMBER 31, 1975, THE NRC STAFF HAD OCCASION TO STUDY THIS QUESTION AND OTHER RELATED ISSUES. THAT STUDY, ENTITLED "NUCLEAR REGULATORY COMMISSION STAFF STUDY CONCERNING FINANCIAL PROTECTION AGAINST POTENTIAL HARM CAUSED BY SABOTAGE OR THEFT OF NUCLEAR MATERIALS," WAS TRANSMITTED ON JUNE 9, 1975, BY THEN NRC CHAIRMAN WILLIAM A. ANDERS TO SENATOR JOHN O. PASTORE, THEN CHAIRMAN OF THE JOINT COMMITTEE ON ATOMIC ENERGY. A COPY OF THIS STUDY IS APPENDED FOR YOUR INFORMATION. WITH RESPECT TO YOUR SPECIFIC QUESTION, THE STUDY GENERALLY CONCLUDED THAT THE PRICE-ANDERSON ACT WOULD NOT APPLY AND THAT THE ONLY REMEDY FOR INJURED CLAIMANTS WOULD BE THAT AFFORDED THEM BY APPLICABLE STATE TORT LAW.

AS STATED IN NRC'S 1983 REPORT TO CONGRESS (NUREG-0957), ALTHOUGH INCIDENTS ARISING OUT OF CERTAIN ACTS OF SABOTAGE AND THEFT ARE COVERED UNDER PRICE-ANDERSON, THERE ARE GAPS IN COVERAGE THAT THE RIBICOFF AMENDMENT TO H.R. 15323 (SEPTEMBER 30, 1974) WOULD HAVE CLOSED PROVIDED THE NUCLEAR MATERIAL COULD BE TRACED TO A PARTICULAR INSURED LICENSEE. WITH SUCH PROOF ABSENT, HOWEVER, THE NRC VIEW WAS THAT ANY COMPENSATION TO THE INJURED PUBLIC SHOULD BE A GOVERNMENT RESPONSIBILITY.

QUESTION 4. HOW MANY NUCLEAR PLANTS ARE STILL UNDER CONSTRUCTION IN THE U.S.? ASSUMING THAT ALL THESE PLANTS ARE COMPLETED, WHAT WOULD BE THE TOTAL POTENTIAL MONEY AVAILABLE TO THE PUBLIC IN THE EVENT OF AN ACCIDENT, UNDER THE PROVISIONS OF S. 1225?

ANSWER.

THERE ARE 25 NUCLEAR PLANTS UNDER ACTIVE CONSTRUCTION IN THE U.S. BY ADDING THESE 25 PLANTS TO THE 95 LARGE POWER REACTORS THAT PRESENTLY HAVE OPERATING LICENSES, THIS WOULD RESULT IN A TOTAL OF 120 PLANTS. UNDER S.1225, THE COMMISSION MUST ESTABLISH THE RETROSPECTIVE PREMIUMS AT A FIGURE BETWEEN $10 AND $15 MILLION PER REACTOR. ASSUMING THAT THE NRC ESTABLISHED THIS PREMIUM AT $15 MILLION, THE SECONDARY RETROSPECTIVE PREMIUM LAYER WOULD BE $1.8 BILLION (120 X $15 MILLION). WHEN THE SECONDARY LAYER IS ADDED TO THE CURRENT $160 MILLION PRIMARY INSURANCE LAYER AND THE $500 MILLION PER KW/HR THIRD LAYER, THIS WOULD RESULT IN TOTAL POTENTIAL FUNDS OF $2.46 BILLION.

QUESTION 5. (A) IN THE EVENT OF A SEVERE NUCLEAR ACCIDENT THAT RESULTED IN SIGNIFICANT OFFSITE RADIATION RELEASE, HOW MUCH MONEY DO YOU THINK WOULD ACTUALLY BE NEEDED -- AND COULD ACTUALLY BE SPENT -- IMMEDIATELY FOLLOWING THE INCIDENT? DO YOU THINK THAT A FIGURE AROUND $2 TO $2.5 BILLION IS MORE THAN ADEQUATE TO COVER THESE IMMEDIATE NEEDS?

ANSWER.

IT IS VERY DIFFICULT TO DETERMINE THE AMOUNT OF MONEY THAT WOULD BE NEEDED OR THAT COULD BE SPENT FOLLOWING A SEVERE NUCLEAR ACCIDENT. SUCH A DETERMINATION WOULD DEPEND TO A LARGE EXTENT ON THE LOCATION OF THE REACTOR THAT SUFFERED THE ACCIDENT, THE TYPE OF ACCIDENT, AND THE METEOROLOGY AT THE TIME OF THE ACCIDENT, AND THE SIZE OF THE POPULATION IN THE AREA AROUND THE PLANT SITE. ONE CANNOT SAY WITH CERTAINTY THAT $2 OR $2.5 BILLION WOULD BE ADEQUATE TO MEET ALL IMMEDIATE CLAIMS.

HOWEVER, THE COMMISSION BELIEVES THAT A FIGURE SOMEWHERE BETWEEN 2 AND 5 BILLION DOLLARS WOULD PLACE THE PUBLIC IN AN EQUAL OR BETTER POSITION TO RECOVER COMPENSATORY PAYMENTS (AND UNQUESTIONABLY A BETTER POSITION FOR PROMPT COMPENSATION) THAN WOULD BE THE CASE IF NORMAL TORT PRINCIPLES AND PROCEDURES WERE FOLLOWED, THERE WERE NO READILY AVAILABLE FUNDS TO PAY CLAIMS THROUGH MANDATORY INSURANCE OR GOVERNMENT INDEMNITY, AND NO CAP ON LIABILITY WERE ESTABLISHED. SUCH AN "UNLIMITED LIABILITY" REGIME

QUESTION 5(A). (CONTINUED) - 2 -

IS ILLUSORY, BECAUSE RECOVERY WOULD IN FACT BE LIMITED TO THE ABILITY OF THE UTILITY WHICH CAUSED THE ACCIDENT TO PAY DAMAGE CLAIMS ASSOCIATED WITH IT.

COMMISSIONER ASSELSTINE ADDS:

COMMISSIONER ASSELSTINE BELIEVES THAT THERE ARE SOME POSSIBLE ACCIDENT SCENARIOS FOR SOME PLANT SITES THAT WOULD RESULT IN PUBLIC LIABILITY CLAIMS FAR IN EXCESS OF THE AMOUNT OF FUNDS PROVIDED UNDER S.1225. IN SUCH CASES, THE PRICE-ANDERSON ACT REQUIRES THAT THE AVAILABLE FUNDS BE APPORTIONED BETWEEN IMMEDIATE CLAIMS AND LATER CLAIMS FOR LATENT INJURIES, THEREBY FURTHER REDUCING THE AMOUNT OF MONEY AVAILABLE TO PAY EARLY CLAIMS UNDER S.1225.

QUESTION 5. (B) WHAT IS YOUR OPINION OF THE PROVISION IN S. 1225, SEC. 6, THAT SETS FORTH THE PROCEDURES FOR CONGRESSIONAL REVIEW AND ACTION ON ADDITIONAL COMPENSATION PLANS ABOVE AND BEYOND THE FUNDS THAT WOULD BE IMMEDIATELY AVAILABLE AFTER AN ACCIDENT? IN THE CASE OF COMMERCIAL NUCLEAR PLANTS, WHAT SOURCES OF FUNDS MIGHT BE APPROPRIATE FOR SUCH ADDITIONAL COMPENSATION? SHOULD THE BILL PROVIDE SOME SPECIFIC EXAMPLES OF COMPENSATION MECHANISMS, OR SHOULD THIS BE LEFT TO THE CONGRESS TO DETERMINE AT THE TIME OF THE INCIDENT?

ANSWER.

THE COMMISSION SUPPORTS THIS PROVISION AS AN IMPROVEMENT ON THE PRESENT FORMULATION OF THE CONGRESSIONAL COMMITMENT CONTAINED IN PRICE-ANDERSON WHICH WOULD BE TO REVIEW THE SITUATION AFTER AN ACCIDENT AND TAKE WHATEVER ACTION IS APPROPRIATE. APPROPRIATE SOURCES OF FUNDS FOR ADDITIONAL COMPENSATION MIGHT INCLUDE THE GENERAL PUBLIC AS TAXPAYERS, THE UTILITY INDUSTRY IN GENERAL THROUGH THE ASSESSMENT OF ADDITIONAL RETROSPECTIVE PREMIUMS, OTHER PARTICIPANTS IN THE NUCLEAR INDUSTRY SUCH AS SUPPLIERS AND ARCHITECT-ENGINEERS THROUGH ASSESSMENT OF CHARGES AFTER THE FACT, OR THE UTILITY SUFFERING THE ACCIDENT AND OTHER PERSONS WHO MAY BE LIABLE FOR THE ACCIDENT THROUGH A REIMPOSITION OF TORT REMEDIES WITHOUT RECOURSE TO A LIMIT OF LIABILITY. WHILE THERE IS MERIT IN LEAVING THE IMPOSITION OF COMPENSATION MECHANISMS TO THE CONGRESS

QUESTION 5(B). (CONTINUED) - 2 -

AT THE TIME OF THE INCIDENT SINCE THIS WOULD PROVIDE FOR TAILORING THE PLAN TO THE FACTS OF A GIVEN INCIDENT, DISCUSSION OF THE DEGREE TO WHICH THE CONGRESSIONAL REVIEW MECHANISM WILL PROVIDE FOR FULL COMPENSATION COULD BE AIDED IF CONGRESS WERE TO DESCRIBE IN THE BILL, IN MORE DETAIL, WHAT SOURCES OF FUNDS, INCLUDING APPROPRIATED FUNDS, MIGHT BE CONSIDERED IN THIS CONTEXT.

COMMISSIONER ASSELSTINE ADDS:

COMMISSIONER ASSELSTINE BELIEVES THAT IT IS BETTER TO ESTABLISH A COMPLETE FRAMEWORK FOR PUBLIC COMPENSATION BEFORE AN ACCIDENT. HE BELIEVES THAT THE APPROACH TAKEN IN S.1225 IS LESS LIKELY TO RESULT IN FULL PUBLIC COMPENSATION IN ALL CASES, AT LEAST WITHOUT A CONTINUING FEDERAL FINANCIAL COMMITMENT. IF AN APPROACH SUCH AS THAT IN S. 1225 IS TAKEN, THE BILL SHOULD STATE EXPLICITLY THE POSSIBLE SOURCES OF ADDITIONAL FUNDS AND THE MEANS FOR COLLECTING THOSE FUNDS. SUCH SOURCES COULD INCLUDE ALL UTILITIES OR THE NUCLEAR UTILITIES. POSSIBLE MEANS FOR COLLECTING ADDITIONAL FUNDS COULD INCLUDE A SUBSEQUENT FEE ON THE GENERATION OF ELECTRICITY OR A FEE ON NUCLEAR-GENERATED ELECTRICITY. IF YOU WISH TO PRESERVE THESE OPTIONS, THIS SHOULD BE REFLECTED IN THE BILL AND ANY LIMITATION ON THE NUCLEAR INDUSTRY'S LIABILITY SHOULD EITHER BE ELIMINATED OR EXPRESSLY QUALIFIED TO PRESERVE THE OPTION OF IMPOSING ADDITIONAL ASSESSMENTS ON THE INDUSTRY AFTER AN ACCIDENT.

QUESTION 5. (c) Do you think the Congressional review and action on additional compensation plans is preferable to open-ended annual assessments of all nuclear utilities? Is it also preferable to open-ended exposure of a utility's limited assets to liability claims? Doesn't Congressional review allow better tailoring of the compensation mechanism to the specific causes and consequences of an accident?

ANSWER.

The Commission believes that, of the legislative proposals now before the Congress, S.1225 offers the best prospect for the public's financial protection. Although the Commission is not prepared to recommend a specific liability ceiling, the Commission believes that a ceiling at least as large as that proposed in S.1225, and perhaps as much as $5 billion would be appropriate. Under its three-layer approach to compensation, S.1225 would continue the Price-Anderson principle of limited liability for NRC large power reactor licensees and would ensure equitable and timely compensation of injured parties in the unlikely event of a major nuclear power plant accident. Should the multi-layer protection provided therein be exhausted, Congress reserves the option of taking further action in the event such action is needed.

CHAIRMAN PALLADINO AND COMMISSIONER ASSELSTINE CONTINUE TO SUPPORT THE RECOMMENDATIONS CONTAINED IN NUREG-0957.

COMMISSIONER ASSELSTINE BELIEVES THAT IDENTIFYING A LIMIT OR CAP ON LIABILITY WHICH WILL INDEED ENSURE FULL COMPENSATION IS EXTREMELY DIFFICULT. LIMIT ON ANNUAL LIABILITY, BUT UNLIMITED OVERALL LIABILITY, PROVIDES FULL COMPENSATION WITHOUT CREATING SERIOUS FINANCIAL PROBLEMS FOR ANY ONE UTILITY. HE ALSO BELIEVES THAT PLACING A LIMIT ON LIABILITY AND THEN RELYING ON SOME FUTURE CONGRESSIONAL REVIEW AND ACTION IS NOT THE BEST MECHANISM TO ENSURE FULL AND PROMPT COMPENSATION. ONE NEED ONLY LOOK AT OTHER CASES WHERE CONGRESSIONAL ACTION WAS NECESSARY FOR COMPENSATION OF VICTIMS TO RECOGNIZE THAT RELYING ON CONGRESSIONAL ACTION MAY NOT BE SUFFICIENT, PARTICULARLY IN THE CASE OF LATENT INJURIES. FINALLY, COMMISSIONER ASSELSTINE BELIEVES THAT IF AN OVERALL CAP ON THE INDUSTRY'S LIABILITY IS RETAINED, THAT CAP SHOULD BE HIGH ENOUGH TO COVER THE PUBLIC LIABILITY COSTS WHICH COULD RESULT FROM A SERIOUS NUCLEAR ACCIDENT. SUCH A FIGURE WOULD BE WELL IN EXCESS OF THE AMOUNT OF MONEY AVAILABLE UNDER S.1225.

THE COMMISSION ALSO BELIEVES THAT CONGRESSIONAL REVIEW AND ACTION AS PROVIDED IN S.1225 IS PREFERABLE FROM THE POINT OF VIEW OF PROVIDING FULL COMPENSATION TO THE PUBLIC TO THE QUESTIONABLE ASSURANCE OF COMPENSATION THROUGH THE EXPOSURE OF A UTILITY'S ASSETS TO LIABILITY CLAIMS AS WOULD BE THE CASE IF THE PRICE-ANDERSON ACT WERE ALLOWED TO EXPIRE AND CURRENT PROVISION FOR

QUESTION 5(c). (CONTINUED) - 3 -

FINANCIAL PROTECTION TERMINATED. CONGRESSIONAL REVIEW WOULD ALLOW BETTER TAILORING OF THE COMPENSATION MECHANISM TO THE SPECIFIC CAUSES AND CONSEQUENCES OF THE ACCIDENT. THE COMMISSION'S CONCERN IS THAT THERE BE ADEQUATE ASSURANCE OF FULL COMPENSATION TO THE PUBLIC.

QUESTION 6. ON THE ISSUE OF CONSTITUTIONALITY, I HAVE SEEN SOME NRC STAFF MEMOS WHICH RAISE THAT QUESTION ABOUT THE NRC'S OWN PROPOSAL. EVIDENTLY THEY FEEL IT "RAISES POSSIBLE CONSTITUTIONAL CHALLENGES IF SYSTEM IS IMPOSED ON LICENSEES CURRENTLY ENTITLED UNDER ACT TO LIMITATION OF LIABILITY." COULD YOU COMMENT?

ANSWER.

THE LANGUAGE QUOTED IS TAKEN FROM AN INFORMATION PAPER ON THE PRICE-ANDERSON ACT BY THE STAFF IN RESPONSE TO A REQUEST FROM COMMISSIONER ZECH. THIS DOCUMENT, WHICH WAS TRANSMITTED BY THE EXECUTIVE DIRECTOR FOR OPERATIONS, WILLIAM J. DIRCKS, TO COMMISSIONER ZECH BY MEMORANDUM DATED APRIL 12, 1985, CONTAINED A LISTING PREPARED BY THE STAFF OF "PROS" AND "CONS" OF THE VARIOUS ALTERNATIVES OF EXTENDING AND AMENDING THE ACT OR LETTING THE ACT EXPIRE. THE THIRD POINT LISTED UNDER THE "CONS" FOR THE COMMISSION'S LEGISLATIVE PROPOSAL IS THE QUOTED LANGUAGE CONTAINED IN YOUR QUESTION.

BEFORE THE ACT WAS LAST AMENDED IN 1975, THE COMMISSION RECOGNIZED THAT THE CHANGES THEN PROPOSED, IF ENACTED, MIGHT BE CHALLENGED BY POWER REACTOR LICENSEES AS BEING UNCONSTITUTIONAL. NO SUCH CHALLENGE OCCURRED. THE COMMISSION RECOGNIZES, BASED UPON RECENT STATEMENTS MADE BY

INDUSTRY REPRESENTATIVES AND THE NUCLEAR LIABILITY INSURANCE POOLS, THE POSSIBILITY THAT THE COMMISSION'S PROPOSAL THAT AN ANNUAL LIMITATION OF LIABILITY REPLACE THE PRESENT ABSOLUTE LIMIT, IF ENACTED, MIGHT BE CHALLENGED AS UNCONSTITUTIONAL.

THE COMMISSION HAS NOT CONDUCTED THE DETAILED LEGAL RESEARCH THAT WOULD BE NECESSARY TO OFFER ANY FIRM LEGAL OPINION ON THE CONSTITUTIONALITY OF LEGISLATION -- EITHER THAT PASSED IN 1975 OR THAT PROPOSED IN NUREG-0957 -- THAT WOULD APPLY MAJOR CHANGES IN LIABILITY TO EXISTING LICENSEES. DETAILED RESEARCH WAS NOT PERFORMED IN 1983 BECAUSE THE COMMISSION BELIEVED, AT THE TIME THAT NUREG-0957 WAS PREPARED, THAT THE RECOMMENDATION IN NUREG-0957 WAS ANALOGOUS TO THE 1975 LEGISLATIVE IMPOSITION OF THE RETROSPECTIVE LAYER OF FINANCIAL PROTECTION ON ALL LICENSEES. THE COMMISSION RECOGNIZES THAT AN ARGUMENT CAN BE MADE THAT THE 1975 LEGISLATION AND THE NUREG-0957 RECOMMENDATIONS ARE NOT ANALOGOUS AND THAT, GIVEN THE LACK OF JUDICIAL CHALLENGE TO THE 1975 LEGISLATION, ENACTMENT OF THE 1975 LEGISLATION DOES NOT ABSOLUTELY SETTLE ALL CONSTITUTIONAL ISSUES THAT MAY BE RAISED.

WHILE, AS WE HAVE EXPLAINED, DETAILED LEGAL ANALYSIS HAS NOT BEEN PERFORMED, PRELIMINARY RESEARCH THAT HAS BEEN DONE BY OUR LEGAL STAFFS SUGGESTS THAT LEGISLATION ALONG THESE LINES WOULD NOT VIOLATE ANY PROHIBITION REGARDING IMPAIRMENT OF contracts, both because existing indemnity agreements are expressly subject to amendment by reason of changes to the Atomic Energy Act (*see* 10 C.F.R. 140.92, Art. V,) and because the constraints of the contract clause may not be applicable to review of Congressional legislation in any event. *See* *Washington Star Company* v. *International Typographical Union Negotiated Pension Plan*, 729 F.2d 1502 (D.C. Cir. 1984); *Peick* v. *Pension Benefit Guaranty Corp.*, 724 F.2d 1247 (7th Cir. 1983). *But see* *Shelter Framing Corp.* v. *Pension Benefit Guaranty Corp.*, 705 F.2d 1502 (9th Cir. 1983).

The other constitutional provision that appears to be involved is the provision that prohibits a "taking" of property without just compensation. Here again, while our review is preliminary, legal research by our legal staffs suggests that changes along the lines of NUREG-0957 would be constitutionally valid, both because licensee's property rights are substantially defined by the terms of Commission licenses which are expressly subject to changes in the Atomic Energy Act, 10 C.F.R. 50.54(h), and because changes in the Price-Anderson Act can properly be viewed as an aspect of Federal regulation rather than a "taking." *See* *Duke Power Co.* v. *Carolina Environmental Study Group, Inc.* 438 U.S. 59 (1978). Moreover, the altered expectations of existing licensees arising from the potential for greater

LIABILITY DOES NOT APPEAR TO OFFEND DUE PROCESS LIMITS ON RETROSPECTIVE LEGISLATION. SEE USERY V. TURNER ELKHORN MINING CO., 428 U.S. 1 (1976).

ULTIMATELY ANY CONSTITUTIONAL CHALLENGE THAT MAY BE MADE WILL BE RESOLVED BY THE COURTS. NONETHELESS, ANY SUBSTANTIAL CHANGES TO THE PRICE-ANDERSON ACT THAT ARE APPLIED TO EXISTING LICENSEES RAISE QUESTIONS OF FAIRNESS AND EQUITY THAT ARE PROPERLY CONSIDERED AND RESOLVED BY THE CONGRESS, WHETHER OR NOT THESE QUESTIONS RAISE CONSTITUTIONAL ISSUES.

COMMISSIONER ZECH ADDS:

I WAS NOT A COMMISSIONER EITHER IN 1975 OR 1983. I HAVE NO VIEW ON WHY LEGAL RESEARCH ON CONSTITUTIONAL ISSUES RELATED TO PROPOSALS TO AMEND THE PRICE-ANDERSON ACT WAS OR WAS NOT CONDUCTED.

QUESTION 7. IN COMMISSIONER BERNTHAL'S TESTIMONY, HE ADDRESSED THE ISSUE OF PUNITIVE DAMAGES. IN HIS OPINION, IF PUNITIVE DAMAGES WERE ALLOWED TO BE PAID WITH PRICE-ANDERSON INSURANCE FUNDS, THIS WOULD REMOVE THE DETERRENT VALUE OF SUCH DAMAGES, BECAUSE THE INSURANCE POOLS, AND NOT THE UTILITY AT FAULT, WOULD BE RESPONSIBLE FOR THE PAYMENTS. DO YOU AGREE WITH COMMISSIONER BERNTHAL THAT PUNITIVE DAMAGES SHOULD NOT BE INSURABLE UNDER THE PRICE-ANDERSON ACT?

ANSWER.

THE CURRENT PROVISIONS OF SECTION 170 OF THE ATOMIC ENERGY ACT (PRICE-ANDERSON), DO NOT EXPLICITLY EXCLUDE PAYMENT FOR PUNITIVE DAMAGES FROM ANY LEVEL OF PROTECTION -- (1) AVAILABLE COMMERCIAL LIABILITY INSURANCE; (2) RETROSPECTIVE PREMIUMS FROM THE LICENSEES OF EACH OPERATING COMMERCIAL REACTOR, OR (3) GOVERNMENT INDEMNITY.

IN THE COMMISSION'S VIEW, THE PUNITIVE EFFECT OF SUCH AWARDS IS LOST IF A DEFENDANT CAN INSURE ITSELF AGAINST SUCH LIABILITY UNDER THE PRICE-ANDERSON SYSTEM. THEREFORE, THE PRICE-ANDERSON SYSTEM SHOULD BE MODIFIED TO EXPLICITLY EXCLUDE COVERAGE OF PUNITIVE DAMAGES.

IN ANY EVENT, AT THE VERY LEAST PAYMENT OF PUNITIVE DAMAGES SHOULD NOT BE ALLOWED TO DISPLACE PAYMENT FOR COMPENSATORY DAMAGES. SO LONG AS THERE IS A CAP OR A PRACTICAL LIMIT ON THE AMOUNT OF LIABILITY PER ACCIDENT, ULTIMATE COMPENSATORY PAYMENT FOR DAMAGES OF A NUCLEAR ACCIDENT COULD BE JEOPARDIZED BY EARLIER ASSESSMENTS OF PUNITIVE DAMAGES.

COMMISSIONER BERNTHAL ADDS:

I CONCUR IN THIS RESPONSE AS FAR AS IT GOES. HOWEVER, TREATING THE ISSUE OF PUNITIVE DAMAGES UNDER PRICE-ANDERSON DEALS WITH THE SYMPTOM AND NOT THE DISEASE. THE CONGRESS SHOULD CONSIDER AMENDING THE ATOMIC ENERGY ACT TO MAKE IT CLEAR THAT JURIES ARE NOT FREE TO FUNCTION AS LOCAL NRC'S BY DECIDING FOR THEMSELVES WHAT LEVEL OF SAFETY IS ADEQUATE IN THE HANDLING OF RADIOACTIVE MATERIALS. THAT PRINCIPLE WAS BECLOUDED AND CONFUSED BY THE SUPREME COURT'S DECISION IN THE SILKWOOD CASE. THE MINORITY OPINION OF MR. JUSTICE BLACKMUN SPEAKS TO THIS ISSUE.

Question 8. Commissioner Bernthal also commented on the Silkwood decision, in which the Supreme Court held that a state may award punitive damages against an entity regulated by NRC for actions the jury finds negligent, even though no NRC regulations were violated. In Commissioner Bernthal's opinion, this decision sets a bad precedent, because it in effect allows "every jury in America ... (to) theoretically serve as its own Nuclear Regulatory Commission."

Do you agree with Commissioner Bernthal's opinion? Do you feel that Congress should amend the Atomic Energy Act to reaffirm its principle that a licensee fully in compliance with NRC regulations should not be held liable for punitive damages?

Answer.

The Commission believes that state courts should not award punitive damages for conduct or misconduct regulated exclusively by NRC, whether or not an NRC regulation is violated. An award of such punitive damages in state judicial proceedings would have the potential of creating a conflict with the Commission's regulation of nuclear safety and could

INTERFERE WITH THE CAREFULLY STRUCTURED PLAN ESTABLISHED BY CONGRESS FOR DEALING WITH PENALTIES RELATED TO VIOLATIONS OF THE ATOMIC ENERGY ACT AND THE COMMISSION'S REGULATIONS.

WHERE A STATE AWARDED PUNITIVE DAMAGES BASED ON VIOLATION OR LACK OF OBSERVANCE OF A STANDARD DIFFERENT FROM THAT ESTABLISHED BY THE COMMISSION, IT WOULD TEND TO COERCE CONDUCT IN THE STATE TO CONFORM TO THE STATE STANDARD. THIS CREATES THE POTENTIAL FOR DUAL REGULATION WHICH CONGRESS HAS DECLINED TO AUTHORIZE IN THE PAST.

EVEN WHERE PUNITIVE DAMAGES WERE AWARDED BASED ON THE STATE'S DETERMINATION THAT STANDARDS ESTABLISHED BY THE COMMISSION HAD BEEN VIOLATED, AN UNWARRANTED INTERFERENCE WOULD OCCUR. TRIBUNALS LACKING THE EXPERTISE AND EXPERIENCED JUDGMENT OF THE COMMISSION IN NUCLEAR SAFETY MATTERS WOULD BE MAKING DETERMINATIONS ON THE APPROPRIATE SANCTION THAT HAD BEEN INTENDED FOR THE COMMISSION. FOR EXAMPLE, STATE TRIBUNALS MIGHT DEAL INCONSISTENTLY OR INEFFECTIVELY WITH ISSUES RELATING TO THE APPROPRIATENESS OF THE PENALTY, SUCH AS PRIOR ENFORCEMENT HISTORY, AND LICENSEE IDENTIFICATION AND CORRECTION OF THE PROBLEM.

COMMISSIONER BERNTHAL AND COMMISSIONER ZECH ADD:
WE GENERALLY AGREE WITH THIS RESPONSE. BUT WE DO NOT AGREE THAT PUNITIVE DAMAGE AWARDS SHOULD BE PRECLUDED IN CIRCUMSTANCES WHERE

THE NRC ITSELF HAS DETERMINED THAT THERE HAS BEEN WILLFUL VIOLATION OR GROSS NEGLIGENCE OF ITS REGULATIONS AND THE PLAINTIFF HAS SUFFERED GENUINE INJURY AS A RESULT.

WE REALIZE THAT A COUNTER ARGUMENT CAN BE MADE, NAMELY THAT SINCE PUNITIVE DAMAGES ARE MEANT TO DETER FUTURE MISCONDUCT, AND SINCE THE NRC'S CIVIL PENALTY PROCESS HAS THE SAME PURPOSE, AN AWARD OF PUNITIVE DAMAGES IN ANY CIRCUMSTANCE IS A FORM OF DUAL REGULATION WHICH SHOULD NOT BE PERMITTED.

NEVERTHELESS, WE BELIEVE THE PROTECTION OF LICENSEES AGAINST NORMAL TORT LAW PUNITIVE DAMAGES SHOULD EXTEND ONLY SO FAR AS THE NRC FINDS LICENSEES TO BE IN COMPLIANCE WITH ITS REGULATIONS. WHEN NRC REGULATIONS ARE FOUND TO BE WILLFULLY OR RECKLESSLY VIOLATED, LICENSEES FORFEIT SUCH PROTECTION IN MY JUDGMENT, AND SHOULD BE HELD FULLY ACCOUNTABLE. THERE IS NO BETTER DETERRENCE AGAINST SUCH MISCONDUCT THAN TO HOLD OPEN THE POSSIBILITY (WHICH EXISTS UNDER CURRENT LAW) THAT THE ENTITIES RESPONSIBLE WILL NOT ONLY BE SUBJECT TO NRC ENFORCEMENT, BUT WILL BE LIABLE FOR PUNITIVE DAMAGES AS WELL. INDEED, IN THE EXTREME CASE, THE NRC'S ENFORCEMENT AUTHORITY MAY BE INSUFFICIENT TO EXACT A PENALTY APPROPRIATE TO THE CIRCUMSTANCE. FURTHERMORE, IF THE INDIVIDUAL, RATHER THAN THE GENERAL PUBLIC, IS THE EGREGIOUSLY INJURED PARTY, IT SEEMS ONLY FAIR THAT THE INDIVIDUAL, RATHER THAN THE GOVERNMENT, BE PERMITTED TO SUE FOR PUNITIVE DAMAGES.

COMMISSIONER ASSELSTINE AND COMMISSIONER ZECH ADD:
COMMISSIONERS ASSELSTINE AND ZECH BELIEVE THAT THE RELATIONSHIP BETWEEN PUNITIVE DAMAGES AND THE PRICE-ANDERSON ACT IS A POLICY QUESTION WHICH SHOULD BE ADDRESSED BY THE CONGRESS. HOWEVER, THEY DOES NOT AGREE WITH THE COMMISSION'S ANALYSIS. COMMISSIONER ASSELSTINE AND ZECH BELIEVE THAT THE PUNITIVE DAMAGE AWARD UNDER STATE TORT LAW MAY BE APPROPRIATE IN SOME CIRCUMSTANCES. THEY NOTE THAT OUR REGULATIONS DO NOT COVER ALL ASPECTS OF FACILITY OPERATIONS AND THAT PUNITIVE DAMAGES MAY BE APPROPRIATE FOR EGREGIOUS CONDUCT BY A LICENSEE IN AREAS NOT COVERED SPECIFICALLY IN NRC REGULATIONS.

QUESTION 9. IF WAIVER OF DEFENSES WERE APPLIED TO ALL NUCLEAR INCIDENTS, WOULD THIS PROVIDE AN ADDITIONAL STRICT LIABILITY REMEDY TO ONSITE WORKERS, WHO ALREADY HAVE A STRICT LIABILITY REMEDY IN WORKERS' COMPENSATION? IS IT WISE TO PROVIDE A STRICT LIABILITY REMEDY FOR RADIATION RELEASES THAT MAY IN FACT BE WITHIN RADIATION LIMITS ESTABLISHED BY THE NRC?

ANSWER.

APPLICATION OF THE WAIVER OF DEFENSES PROVISIONS OF THE PRICE-ANDERSON ACT TO ALL NUCLEAR INCIDENTS COULD PROVIDE ONSITE WORKERS WITH A STRICT LIABILITY REMEDY IN ADDITION TO THE REMEDY THEY PRESENTLY HAVE UNDER STATE OR FEDERAL WORKMEN'S COMPENSATION ACTS. THE PRICE-ANDERSON ACT ONLY APPLIES TO PUBLIC LIABILITY CLAIMS. SUBSECTION 11W. OF THE ATOMIC ENERGY ACT OF 1954, AS AMENDED, ("THE ACT") DEFINES "PUBLIC LIABILITY" AS

> "ANY LEGAL LIABILITY ARISING OUT OF OR RESULTING FROM A NUCLEAR INCIDENT, EXCEPT: (I) CLAIMS UNDER STATE OR FEDERAL WORKMEN'S COMPENSATION ACTS OF EMPLOYEES OF PERSONS INDEMNIFIED WHO ARE EMPLOYED AT THE SITE OF AND IN CONNECTION WITH THE ACTIVITY WHERE THE NUCLEAR INCIDENT OCCURS; . . . ."

NOTHING IN THE WAIVER OF DEFENSES PROVISIONS IN SUBSECTION 170N. OF THE ACT IN ANY WAY ALTERS THE DEFINITION OF "PUBLIC LIABILITY."

THE WAIVERS PROVISIONS APPLY ONLY TO DEFENSES WHICH MIGHT BE ASSERTED AGAINST PUBLIC LIABILITY CLAIMS. IF A WORKER IS EMPLOYED AT THE SITE OF AND IN CONNECTION WITH THE ACTIVITY WHERE THE NUCLEAR INCIDENT OCCURS AND IF THE WORKER IS COVERED BY A STATE OR FEDERAL WORKMEN'S COMPENSATION ACT, THAT ACT ORDINARILY PROVIDES HIS EXCLUSIVE REMEDY AGAINST HIS EMPLOYER FOR COMPENSATION FOR ANY PERSONAL INJURY HE MIGHT INCUR FROM SUCH A NUCLEAR INCIDENT. IF SUCH A WORKER IS NOT COVERED BY A FEDERAL OR STATE WORKMEN'S COMPENSATION ACT HE IS ENTITLED TO COMPENSATION FOR HIS INJURIES UNDER THE APPLICABLE STATE TORT LAW USING THE FUNDS MADE AVAILABLE BY THE PRICE-ANDERSON ACT. REGARDLESS OF WHETHER THE WAIVER OF DEFENSES PROVISIONS APPLY, SUCH A WORKER CANNOT RECOVER UNDER BOTH A WORKMEN'S COMPENSATION ACT AND THE APPLICABLE STATE TORT LAW. IF THE WAIVER OF DEFENSES PROVISIONS WERE APPLIED TO ALL NUCLEAR INCIDENTS AND NOT CONFINED ONLY TO AN EXTRAORDINARY NUCLEAR OCCURRENCE (ENO), AN EVENT RESULTING IN HIGH RADIATION LEVELS ONSITE BUT NEGLIGIBLE OFFSITE RELEASES MIGHT BE FOUND BY A COURT TO BE A NUCLEAR INCIDENT. IN SUCH A SITUATION, ONSITE WORKERS WOULD BE ABLE TO AVAIL THEMSELVES OF THE WAIVER PROVISIONS AND MIGHT HAVE A STRICT LIABILITY CAUSE OF ACTION UNDER APPLICABLE STATE TORT LAW AGAINST AN INDEMNIFIED PERSON OTHER THAN THEIR EMPLOYER. IT SHOULD BE NOTED, HOWEVER, THAT UNDER THE EXISTING STATUTE, ONSITE WORKERS WOULD HAVE THE SAME CAUSE OF ACTION IF AN ENO WERE DECLARED.

NEITHER THE PRICE-ANDERSON ACT NOR NRC REGULATIONS CONTAIN SPECIFIC CRITERIA FOR DETERMINING WHEN A NUCLEAR INCIDENT HAS

OCCURRED. IT IS THEREFORE POSSIBLE THAT A COURT COULD DETERMINE THAT A NUCLEAR INCIDENT HAD OCCURRED EVEN WHERE OFFSITE RELEASES DID NOT EXCEED LIMITS SET IN NRC REGULATIONS. IF WAIVERS APPLIED TO ALL NUCLEAR INCIDENTS, THE WAIVERS COULD APPLY TO RELEASES WITHIN NRC REGULATORY LIMITS. THIS SCENARIO WAS PART OF THE BASIS FOR ESTABLISHING THE "EXTRAORDINARY NUCLEAR OCCURRENCE" (ENO) THRESHOLD IN THE 1966 AMENDMENTS. THIS SCENARIO COULD BE PRECLUDED BY AMENDING THE DEFINITION OF "NUCLEAR INCIDENT" TO EXCLUDE OFFSITE RELEASES WITHIN NRC LIMITS.

THE COMMISSION'S 1983 REPORT RECOMMENDED RETENTION OF THE PRESENT STATUTORY ENO FINDING TO ESTABLISH A DEFINITIVE BASIS FOR VALID CLAIMS AND CONSERVE RESOURCES TO PAY FOR THESE CLAIMS.

COMMISSIONER ASSELSTINE ADDS:

COMMISSIONER ASSELSTINE NOTES THAT THE PRICE-ANDERSON SYSTEM WOULD ONLY APPLY TO WORKER INJURIES WHICH ARE NOT COVERED BY WORKMEN'S COMPENSATION. HE BELIEVES THAT PRICE-ANDERSON COVERAGE IN THESE CIRCUMSTANCES IS APPROPRIATE.

[illegible]

Honorable John O. Pastore
Chairman, Joint Committee on
Atomic Energy
Congress of the United States

Dear Chairman Pastore:

As you will recall, Senator Ribicoff sponsored an amendment to the bill passed by the last Congress (H.R. 15323) to modify and extend the Price-Anderson Act. The amendment was intended to extend Price-Anderson coverage to harm caused by sabotage or theft of nuclear materials. Although the amendment was eliminated by the Conference Committee, the conferees stated their expectation that the Atomic Energy Commission would "conduct a study of this problem and report to Congress with recommendations by early next year." H. Rep. No. 93-1306, p. 3.

In light of the ensuing implementation of the Energy Reorganization Act of 1974, the Nuclear Regulatory Commission, as the agency concerned with administration of the present Price-Anderson system for licensed facilities, submits this letter and the enclosed staff study in response to the conferees' request. We understand that the Energy Research and Development Administration, which administers Price-Anderson for non-licensed facilities, will also submit its views to the Joint Committee on this problem.

This Commission's authority to enter into new indemnity agreements under the present Price-Anderson Act will expire on August 1, 1977. However, in addressing the present problem, it must be recognized that the present Price-Anderson system will continue for several decades, even if authority to enter into new indemnification agreements is not extended beyond the 1977 expiration date. At the present time, there are over 100 facility indemnification agreements in effect, covering a variety of facilities. Over 90 commercial power reactors are expected to be covered by federal indemnity agreements, many of them only recently executed and extending for the lives of the licenses, a 40 year period for each license.

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Nevertheless, how best to protect the public financially from risks posed by sabotage or theft of nuclear material is but one aspect of broader, and possibly interrelated, issues presented by possible extension or modification of the Price-Anderson system. For example, a much broader issue related to the question of Price-Anderson is whether the government ought to provide indemnity coverage generally applicable to terrorist activity. The ultimate resolution of these broader issues will follow a full airing in Congressional hearings of the range of views of the cognizant government agencies, the interested public, the nuclear industry, the liability insurers, and others. We believe that firm and detailed recommendations concerning protection against sabotage and theft risks would be premature at this time. Such recommendations, we would also note, could be affected by the results of the Security Agency Study mandated by the Energy Reorganization Act of 1974, which is presently underway. From the present perspective, however, we can offer certain views we hope will contribute to an appropriate resolution.

A basic question presented by Price-Anderson in general, and coverage of sabotage and theft risks in particular, is that of identifying who is responsible for these risks and therefore, who will bear the financial burden of this coverage. Under the present system, in the event of a catastrophic nuclear incident, the federal government would pay for the major portion of the damages, to the statutory ceiling of $560 million dollars. Under the "deferred premium" system enacted last year -- but vetoed for an unrelated reason -- the government's liability would have been progressively phased out and the full potential cost ultimately assumed by the industry, subject to a rising ceiling of liability. We generally support the proposition that private industry should assume the burden of risks which may be created in undertaking a commercial operation. But as the staff study suggests, a case might be made for at least partial government responsibility for the costs of public protection against sabotage and theft risks, particularly where there is no clear connection between the damage-causing event and a specific firm or if the government were to assume pervasive responsibility for safeguarding nuclear materials in the future.

Although certain acts of sabotage and theft are covered under the present Price-Anderson Act there is a gap in this coverage. As the staff study demonstrates, the fact that damages otherwise covered by Price-Anderson

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are caused by an illegal act of sabotage or theft does not preclude payment of compensation. However, the present coverage scheme, particularly as implemented in the insurance and indemnity agreements, has a geographic frame of reference. As a result, the location from which the nuclear incident emanates would affect coverage of resulting damages. To illustrate with specific examples, an act of sabotage at a reactor site resulting in radioactive contamination damage to the surrounding area would be covered by the present system. The same would be true of sabotage to a materials shipment -- for example, spent fuel from a reactor -- while the shipment was in a planned transportation route. However, an unlawful diversion of nuclear material followed by contamination or other damage resulting from its misuse at another location probably would not be covered. Although this gap in the present scope of coverage is explicable, largely in historical terms, it is inconsistent with the goal of protecting the public. It is not clear whether this Commission presently has the authority to close this coverage gap by regulatory action. But since the broader issues raised by Price-Anderson will be pending before this Congress, we think a legislative resolution would be preferable.

The Ribicoff amendment was designed to close this gap in present coverage. As explained in the staff study, it would have that effect, provided that the insurance industry were willing to extend the requisite coverage, and provided further that the source of the nuclear material in question could be traced to a particular insured licensee. However, in the event that the material could not be so traced, resultant damages would not be covered, regardless of the actual source of material.

We do not mean to imply that this possible tracing problem represents a defect in the approach of the Ribicoff amendment. On the contrary, since the resulting cost of the Ribicoff amendment would have fallen on industry licensees, it seems reasonable, and consistent with the underlying premises of Price-Anderson in its present form, to require proof of a nexus between damages and a specific licensee. Absent such a nexus -- for example, the source might be a government activity in this country, or material unlawfully brought into this country from abroad -- any compensation to the injured public should, in our view, be a government responsibility.

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The staff study outlines several possible approaches to public protection against sabotage and theft risks. Each has certain advantages and disadvantages. As we have said, resolution by Congress of the broader issues raised by a Price-Anderson extension will certainly affect, and may well govern, the best policy choice in this area.

Sincerely,

Original signed by
William A. Anders

William A. Anders
Chairman

Enclosure:
Staff Study

NUCLEAR REGULATORY COMMISSION

STAFF STUDY CONCERNING

FINANCIAL PROTECTION AGAINST POTENTIAL HARM CAUSED BY SABOTAGE OR THEFT OF NUCLEAR MATERIALS

June 1975

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NUCLEAR REGULATORY COMMISSION
STAFF STUDY CONCERNING
FINANCIAL PROTECTION AGAINST POTENTIAL HARM
CAUSED BY SABOTAGE OR THEFT OF NUCLEAR MATERIALS

Introduction

The Price-Anderson Act [1] affords the public substantial financial protection against damages that might arise from certain peaceful uses of nuclear materials, through a combination of private insurance and supplemental federal government indemnity agreements covering licensed production and utilization facilities. [2] The Act has the practical effect of imposing strict and exclusive liability, to a statutory ceiling of $560 million dollars for a single nuclear incident.

Although the relevant provisions of the Act are cast in broader terms, the types of incidents primarily contemplated by the draftsmen of the original 1957 statute were of an accidental nature [3] -- for example, accidents that might result from malfunctioning equipment at a reactor. More recently, concerns have been increasingly expressed about damages that might result from sabotage of facilities or "diversion" of nuclear materials -- an imprecise term usually connoting theft. Attention has focused in particular on the possibility that a terrorist or criminal group with the requisite technical expertise might steal sufficient material to construct and detonate a crude nuclear bomb. In response to these concerns, Senator Ribicoff sponsored an amendment to proposed legislation in the 93d Congress (H.R. 15323) to modify and extend the Price-Anderson Act. The amendment, adopted in the Senate but deleted by the Conference Committee, was designed to extend Price-Anderson coverage to potential harm caused by sabotage or theft. The Conference Committee report stated in this regard that --

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[1] The Act is section 170 of the Atomic Energy Act of 1954, as amended, and the related definitions in section 11 of that Act. 42 U.S.C. 2210, 2014.

[2] For convenience, and because similar considerations generally apply, discussion herein is directed primarily to licensed nuclear power reactors, except as otherwise noted. Licensees of large power reactors are required by the Act to maintain the maximum amount of available private insurance, presently $125 million. Section 170(b). Other facility licensees may maintain lesser amounts of insurance. Id. The Commission has discretion to extend the Price-Anderson system to materials licensees, but that discretion has not been exercised. This study does not cover unlicensed contract activities involving nuclear materials. The major portion of such contracting activities is now within the jurisdiction of the Energy Research and Development Administration, pursuant to the Energy Reorganization Act of 1974. Differing considerations may apply to such activities.

[3] See H. Rep. No. 435, pp. 2-3, 8-10, 85th Cong., 1st Sess.

> "The conferees agreed to eliminate this amendment because the feasibility and ramifications of such inclusion required detailed study. In particular the role of private insurance in relation to Governmental indemnity, as well as their relationship to safeguard regulations, requires further consideration. The conferees expect the Atomic Energy Commission to conduct a study of this problem and report to Congress with recommendations by early next year. The Joint Committee will then conduct hearings to determine what, if any, legislative changes are required." H. Rep. No. 93-1306, p. 3.

The bill was subsequently vetoed by the President, but the veto was occasioned by an unrelated provision. [4] This study has been prepared in response to the conferees' request.

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[4] The Presidential veto was based on section 12 of the Act, under which the legislation might have been nullified by a subsequent concurrent resolution of both Houses. The President viewed this provision as an unconstitutional incursion upon his veto power. See House Document No. 93-370, vetoing H. R. 15323.

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In order to obtain a range of viewpoints on the subject within the limited time available, the Commission staff met informally or spoke with persons associated with industry and public interest groups, [5/] and the nuclear liability insurance pools. The staff has considered the varied views expressed in those discussions in its preparation of this study. Because a principal issue presented is the willingness of the nuclear liability insurance pools to extend present Price-Anderson coverage, their positions with respect to various issues were formally solicited by Senator Ribicoff and also by the Commission staff. Included as Appendix C are Senator Ribicoff's August 12, 1974 letter, the replies by the pools to it, the Commission staff's letter of October 9, 1974, and the pools' replies of December 16, 1974, and January 14, 1975.

This study includes --

-- a statement of the problem;

-- an analysis of the present scope of Price-Anderson coverage with respect to damages that might arise from sabotage or theft of nuclear materials;

-- an analysis of the Ribicoff amendment; and

-- an analysis of alternative approaches to the problem;

5/ Industry contacts included the Atomic Industrial Forum, Edison Electrical Institute, American Public Power Association and the National Rural Electric Cooperative Association. Public interest group contacts included Friends of the Earth, Congress Watch, and the Sierra Club. The Staff did not formally solicit nor did these organizations submit position papers. However, the Staff believes that the views expressed through these informal contacts were fairly representative of the positions of the named groups.

I. STATEMENT OF THE PROBLEM

The sabotage and theft scenarios contributing to current safeguards concerns are based largely on three relatively recent developments -- increased terrorist activity; public availability of technical information concerning the construction of nuclear bombs; and possible increased use of weapons-grade materials in the fuel cycles associated with nuclear power generation. For example, the authors of a report to the Energy Policy Project sponsored by the Ford Foundation[6] have described a variety of scenarios involving theft of nuclear materials and subsequent blackmail, contamination of an area, or detonation of a crude nuclear bomb.

The current generation of light-water cooled reactors uses a low-enrichment type of uranium fuel which is not of weapons grade. This material could not be made into a bomb unless those stealing it also had access to highly sophisticated isotope enrichment facilities which in the United States are now owned and operated exclusively by the federal government. Those few reactors licensed to use highly-enriched uranium and plutonium -- weapons grade fuel -- are presently subject to more stringent safeguards requirements than those applicable to most reactors.

Present concerns arise in part from the possibility of increased use of recycle plutonium and highly-enriched uranium in reactor fuel. [7] Such

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6/ Nuclear Theft: Risks and Safeguards, by Mason Willrich and Theodore Taylor (Ballinger, 1974).

7/ In August 1974, the AEC staff issued a draft "Generic Environmental Statement on Mixed Oxide Fuel (GESMO)" which assesses the environmental impacts of widespread use of recycle plutonium in reactor fuel. Outside comments have been received on the staff draft, but the Commission has not formally acted on this proposal.

material could be used to construct a nuclear explosive and, because of its high radiotoxicity, plutonium could be a threat to public health if released through an act of sabotage. While, in our judgment, the possibility of successful construction of a "basement bomb" may have been overstated in some quarters, for purposes of this study the possibility cannot be disregarded.

A significant aspect of the problem is that some nuclear-related damages not covered by Price-Anderson are also not covered by any other form of insurance. For example, the standard form homeowner's insurance policy contains a "radiation" clause which excludes from coverage damages caused by nuclear incidents, whether by radiation or explosion. Although similar exclusions are generally not included in life and health insurance policies, they may be found in other kinds of property insurance. As a result, public protection issues posed here are not limited to whether some form of protection should be provided for those who cannot afford insurance, or for those who lack the prudence to protect themselves.

An assessment of the risks posed by possible sabotage or theft of nuclear materials is necessarily beyond the scope of this study. Because of the multiple human variables involved and the lack of any experience with such incidents, among other factors, it may never be possible to quantify such risks with any precision. The degrees of risk posed -- whatever they may be -- are, of course, directly related to the effectiveness of safeguards measures imposed on facility licensees, and others legally possessing nuclear materials. An outline of current safeguards requirements is included as Appendix A. [8]

Current concerns about sabotage and theft of nuclear materials have created broad recognition of a need for rigorous examination of the safeguards area. Congressional recognition of that need is emphasized by section 204 of the Energy Reorganization Act of 1974, which established an "Office of Nuclear Material Safety and Safeguards," under a Director who may report directly to the Commission. This newly-created office has broad responsibilities in the safeguards area. Another provision of the Act (section 204(b)(2)(C)) directs the Commission to conduct a study of the need for and feasibility of establishing a security agency within this Commission for the performance of safeguards functions.

A need for more stringent safeguards procedures was recognized in the AEC staff's draft environmental impact statement on the use of recycle plutonium in light water reactors issued in August 1974. [9] Because recycle plutonium has characteristics more inherently dangerous than low-enriched uranium fuel, the draft impact statement concluded that safeguards objectives "will not be fully met for Pu recycle by current safeguards measures." The staff concluded, however, that some combination of new safeguards measures could deal adequately with the problems posed, should the Commission decide to proceed with widescale authorization of mixed-oxide fuels. The staff environmental review of mixed oxide fuels, including safeguards issues, has not been approved by the Commission. However, the staff has underway a broad study of safeguards issues raised by plutonium recycle, which is to be coordinated with the Congressionally-mandated federal security agency study.

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[8] An historical outline of events bearing upon the evolution of the Commission's present safeguards requirements is included as Appendix B.

[9] See note 7, supra.

We refer to these developments to reemphasize that an assessment of the effectiveness of current safeguards measures is necessarily beyond the scope of this study. Indeed, as suggested hereafter, the results of safeguards studies currently underway may bear strongly on the proper resolution of the present problem. This relatively narrow study proceeds on two basic assumptions which rest on the staff's judgment and experience. First, that recent increases in terrorist activities and the possible increased volumes of materials in the nuclear fuel cycles create some risk to the public, in whatever way that risk is measured. Second, that regardless of the thoroughness and sophistication of safeguards measures that may be implemented in the future, "fail-safe" measures cannot be achieved. Although we believe that risks to the public from sabotage and theft will be small, given a soundly conceived and implemented safeguards approach, they cannot, at least at this juncture, be dismissed as inconsequential.

II. PRESENT SCOPE OF PRICE-ANDERSON COVERAGE OF DAMAGES CAUSED BY SABOTAGE OR THEFT OF NUCLEAR MATERIALS

The present Price-Anderson system, as previously implemented by the AEC in insurance and indemnity agreements, has a distinct geographic frame of reference. The agreements provide coverage for damages emanating from a specifically described site or from the transportation of nuclear material to or from such "covered" sites. This conceptual scheme makes it possible to analyze present coverage of damages caused by sabotage of facilities or theft of nuclear materials with reference to three types of hypothetical situations. First, sabotage of a nuclear facility resulting in radioactive contamination of the surrounding area. Second, sabotage of a shipment of nuclear material, similarly resulting in contamination of the surrounding area. In these first two situtations, as a practical matter, explosion damage could not occur. Third, successful theft of nuclear material from a facility, or from a shipment of material. In this last case, damages could be caused later from another location, either by deliberate contamination of an area or, conceivably, by detonation of a crude nuclear bomb.

Whether the present Price-Anderson system would cover damages caused in these hypothetical situations turns primarily upon two questions which focus separately on the character of the act causing the damage and the geographical location of the source of the damage. Does coverage extend to damages caused by a deliberate, illegal act of sabotage or theft? Assuming such damages are covered, does coverage extend to damages emanating from a location remote from a facility or planned transportation route? The answers to these questions may depend upon the circumstances of the particular case. Nevertheless, as discussed below, the staff believes that, as a general proposition, damages otherwise covered by Price-Anderson are covered notwithstanding the fact that they are caused by sabotage or theft. Accordingly, damages caused in the first two situations hypothesized above would be covered. However, the staff believes that the Price-Anderson system as presently implemented probably does not extend to damages emanating from a location remote from a facility or planned transportation route.[10/] Accordingly, damages caused in the third situation hypothesized above, flowing from a successful theft of nuclear material, would not be covered.

A. The Significance of an Illegal Act

The present scope of Price-Anderson coverage is derivable from the statute itself, from the standard forms of insurance and indemnity agreements prescribed by the Commission pursuant to statutory authority (10 CFR 140.91, 140.92), and from applicable legal doctrines. Turning first to the question whether the illegal nature of the act affects coverage, the basic coverage provisions of the statute are written in very broad terms. The overall purpose of the statute is to protect the public from damages arising out of nuclear incidents. The phrase "nuclear incident" is broadly defined to mean "any occurrence ... causing ... bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of ... nuclear ... material." Section 11(q). The statute provides

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[10/] As noted below, there is some doubt whether the present statute authorizes the Commission to extend insurance and indemnity agreements to these situations.

that the Commission's contracts of indemnity, which are intended, in general, to be co-extensive in coverage with the private insurance contracts, "shall cover public liability *arising out of or in connection with* the licensed activity." Section 170(c) (emphasis added). And the term "public liability" is, in turn, defined to mean "any legal liability arising out of or resulting from a nuclear incident", with three specified exceptions.

Especially relevant here is an exception for "claims arising out of an act of war." Section 11(w). With respect to this exception, the report of the Joint Committee accompanying Price-Anderson as originally enacted expressly stated that:

> "Any single act of sabotage would be covered by the indemnification provisions of the bill if it could not be proven to be an act of war." 11/

It may nevertheless seem somewhat ironic that an insurance-indemnity scheme paid for by a licensee would cover damages caused by a third person over whom the licensee has no control. The net result is that saboteurs and thieves are insulated from liability. But this "omnibus coverage" feature was deliberately incorporated into the Price-Anderson scheme. The statute expressly defines "person indemnified' to mean "the person with whom an indemnity agreement is executed *and any other person who may be liable for public liability* ... (emphasis added). Section 11(t). The primary reason cited at the time for this feature was to extend coverage to incidents for which equipment designers, manufacturers or others might eventually be proved responsible, and to preclude actions against them. Another example involved a hypothetical airplane pilot who might accidentally crash into a reactor. 12/ But an overall purpose of "omnibus coverage" -- applicable

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11/ H. Rep. No. 435, 85th Cong., 1st Sess., p. 18.

12/ *Id.* at p. 17.

to saboteurs as well as to equipment manufacturers -- was to promote expeditious and certain payment of claims. To that end, damage claimants are channeled, as a practical matter, to the insurance and indemnity funds, subject to certain exceptions inapplicable here. [13] Claimants would have no legal recourse against others.

The provisions of the standard forms of insurance and indemnity agreements prescribed by the Commission (10 CFR 140.91, 140.92) implement the quoted statutory provisions. Particularly relevant in this connection are provisions particularizing the statutory waiver of certain defenses in the event of a serious nuclear incident. The "Waiver of Defenses Endorsement" to the Nuclear Energy Liability Policy (Facility Form) provides that the insured licensee waives --

> "any issue or defense as to the conduct of the claimant or the fault of the insured, including but not limited to ... unforeseeable intervening causes, whether involving the conduct of a third person or an act of God...."

The same waiver language is contained in the prescribed form of indemnity agreement between the Commission and the licensees. An attempted defense to a claim resulting from an act of sabotage or theft probably would fall within the category of an "intervening cause ... involving the conduct of a third person." But such defenses would be precluded by these express waivers in the insurance and indemnity contracts. Like damages resulting from an "act of God" -- e.g. an earthquake -- they are compensable.

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[13] The conclusion that the statute contemplates coverage of damages caused by illegal acts is reinforced by a provision in section 170(h) relating to waiver of defenses in the event of an "extraordinary nuclear occurrence." That section provides that such waivers shall not apply --

> to injury or damage to a claimant or to a claimant's property which is intentionally sustained by the claimant or which results from a nuclear incident intentionally and wrongfully caused by the claimant. (Emphasis added.).

Thus, damages suffered by the wrongdoer himself are not covered, but the damages he inflicts on others are covered.

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The only apparent basis for an argument that illegal acts -- such as sabotage of a reactor -- are not covered by Price-Anderson would be language in the insurance agreements implementing the statutory "act of war" exclusion. This provision excludes from coverage --

> bodily injury or property damage due to war, whether or not declared, civil war, insurrection, rebellion or revolution, or to any act or conditions incident to any of the foregoing.

Because terms like "insurrection" and "revolution" have no precise legal meaning in this context, the line between them and the "single act of sabotage" referred to by the Joint Committee might be difficult to draw in some cases. Generally speaking, however, this exclusion appears to contemplate a relatively widespread and actual disruption of the civil order.[14] The mere fact that a group of terrorists may label themselves "revolutionaries" would not necessarily make their actions a "revolution" within the meaning of this exclusion.

In the event of a serious nuclear incident and unwillingness on the part of the insurance companies or the government to concede liability, questions concerning the scope of Price-Anderson coverage would ultimately be determined by the federal courts. Although many of the questions presented would be of first impression -- the Price-Anderson compensation machinery is unique in many respects and has never been construed by the courts -- there are generally-applicable legal doctrines to guide the judicial approach. For example, it has long been held that doubtful questions of interpretation are to be resolved against insurers and in favor of insureds and beneficiaries.[15]

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[14] See *Home Ins. Co.* v. *Davila*, 212 F. 2d 731, 735-738 (C.A. 1, 1954); H. Rep. 435, 85th Cong., 1st Sess. at p. 18.

[15] See, e.g., *Equitable Safety Ins. Co.* v. *Hearne*, 87 U.S. 494 (1874).

Quite apart from abstract legal doctrine, the uniqueness of a serious nuclear incident and the comparative equities of injured parties, licensees, and the government would probably affect a court's view of the case. As Justice Jackson stated in dissent in Dalehite v. United States, 346 U.S. 15, 49 (1953), a damage suit arising out of the Texas City disaster --

> "This is one of those cases that a judge is likely to leave by the same door through which he enters. As we have been told by a master of our craft, '*Some* theory of liability, some philosophy of the end to be served by tightening or enlarging the circle of rights and remedies, is at the root of any decision in novel situations when analogies are equivocal and precedents are silent.'" 16/

In the event of a serious nuclear incident caused by theft or sabotage, it seems likely that a judicial awareness of who is in a better position to bear the loss would resolve a doubtful legal question in favor of coverage. As Justice Jackson observed in Dalehite, "[I]njury so sudden and sweeping should not lie where it has fallen." Id. at 54.

The foregoing analysis demonstrates that, at least as a general proposition, damages otherwise covered by the present Price-Anderson system are covered notwithstanding the fact that they are caused by an illegal act, such as sabotage or theft. We next consider the significance of the geographical frame of reference incorporated in the present Price-Anderson system.

B. Geographic Limitations on Coverage

As noted previously, the present Price-Anderson system, as implemented in outstanding insurance and indemnity agreements, has a geographic frame of reference. The underlying assumption was that damages would emanate from a

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16/ The quotation is from Cardozo, The Growth of the Law, p. 102 (emphasis in the original).

facility site or from a planned transportation route. Aside from the successful theft possibility on which recent attention has focused, there was no reason to suppose that that would not be the case when the forms of agreements were drafted. A practical reason for adopting this geographic site-related concept is that the statute excludes from coverage damages to property "located at the site of and used in connection with the licensed activity where the nuclear incident occurs." Section 11(w). However, damages to a licensee's property located off-site would be covered.

Licensee insurance coverage and government indemnity apply to damages occurring in the course of transportation of nuclear materials to or from an indemnified facility. The waiver of defenses provision of Price-Anderson refers expressly to nuclear occurrences happening "in the course of transportation of [nuclear] material ... to or from a production or utilization facility." Section 170(n). The Nuclear Energy Liability Policy (Facility Form) contains the following provision with respect to coverage of the transportation of nuclear material:

> "'[I]nsured shipment' means a shipment of source material, special nuclear material, spent fuel or waste, herein called 'material,' (1) to the facility from any location except an indemnified nuclear facility, but only if the transportation of the material is not by predetermination to be interrupted by removal of the material from a transporting conveyance for any purpose other than the continuation of its transportation, or (2) from the facility to any other location, but only until the material is removed from a transporting conveyance for any purpose other than the continuation of its transportation."

Similarly, the Government indemnity agreements cover any liability arising out of or resulting from a nuclear incident occurring "in the course of transportation" of nuclear material. The definition of the phrase "in the course of transportation" in the indemnity agreements is essentially similar to the definition of "insured shipment" used in the insurance policies. Thus, when either the point of origin or the point of destination of a shipment of nuclear material is an indemnified facility, the material is afforded Price-Anderson protection during transit by the terms of the financial protection and indemnity agreements. [17/]

It seems clear, therefore, that acts of sabotage or attempted theft resulting in damages emanating from a facility site or planned transportation route -- the first two situations previously hypothesized -- would be covered by the present Price-Anderson system. It is important to note, however, that the quoted definition of "insured shipment" in the insurance contracts seems to say that an "insured shipment" loses that status if and when the material is diverted from a planned transportation route. And the definition of "extraordinary nuclear occurrerce" -- the concept which triggers the waiver of defenses provision in the event of a serious nuclear incident -- contains a similar geographic frame of reference. As relevant here, the phrase is defined to mean --

> "any event causing a discharge or dispersal of [nuclear] material ... from its intended place of confinement in amounts offsite, or causing radiation levels offsite.... As used in this subsection, 'offsite' means away from 'the location' or 'the contract location' as defined in the applicable Commission indemnity agreements...." Section 11(j).

[17/] Examples of these situations would be (1) shipments from a fuel fabrication plant [nonindemnified] to a nuclear power plant [indemnified] and (2) from a fuel reprocessing plant [indemnified] to a licensed waste disposal site [nonindemnified]. Where both the points of origin and destination are indemnified facilities, the material is covered during transit by the financial protection and indemnity agreements maintained by the licensee at whose facility the shipment originated. An example of this situation would be a shipment of spent fuel from a nuclear power plant to a fuel reprocessing plant. Since it is in the transportation phase of any nuclear fuel cycle in which nuclear material is generally considered most vulnerable to sabotage or theft (See draft GESMO, P. V-II), the public would be protected at the present time under the provisions of the Price-Anderson Act for any incidents that resulted during transportation to or from indemnified facilities.

This definition appears to contemplate that covered incidents would only occur at a licensed facility (the site) or at a location to be defined in the indemnity agreements, since the phrase "discharge or dispersal" would normally connote the immediate cause of the damage itself. For this language to reach a successful theft and subsequent contamination or detonation from another location -- the third situation previously hypothesized -- the terms "discharge or dispersal" would have to be read to include the theft itself. Such a reading is awkward, to say the least.

Such a limited geographical frame of reference is also reflected in the government indemnity agreements. "The location" referred to in the statutory definition of "extraordinary nuclear occurrence" is defined in individual agreements to mean the site of the particular facility. A nuclear incident, to which coverage is keyed, is in turn defined to mean an occurrence "at the location or in the course of transportation." The phrase "in the course of transportation" is separately defined in such a way as to exclude situations in which material is diverted from the planned route, as follows --

> "The transportation of the radioactive material from the location shall be deemed to end when the radioactive material is removed from the transporting conveyance for any purpose other than the continuation of transportation or temporary storage incidental thereto."

It seems clear, for example, that a successful theft of material from "the transporting conveyance" would be for a purpose "other than the continuation of transportation."

That the Price-Anderson system as presently structured probably would not cover damages following a successful theft of nuclear material results primarily from the geographic limitations written into the insurance and indemnity agreements. Although such geographic limitations appear to be implicit in certain provisions of the statute[18] it is at least arguable that future agreements could be written to cover some such cases. However, the AEC's longstanding practice in implementing the statute with geographic limits, and with the knowledge of the Joint Committee, might be viewed as precluding such an expansion of coverage.[19] Moreover, existing insurance contracts probably could not be rewritten over the insurer's objections. In any event, there is another practical problem in this approach, which also inheres in the Ribicoff amendment, to which we now turn.

III. ANALYSIS OF THE RIBICOFF AMENDMENT

The amendment sponsored by Senator Ribicoff in the last Congress would have changed the statutory definitions of "extraordinary nuclear occurrence" (section 11(j)) and "nuclear incident" (section 11(q)) to read, in pertinent part, as follows (amendatory language underscored):

> "j. The term 'extraordinary nuclear occurrence' means any event causing a discharge or dispersal of source, special nuclear, or byproduct material from its intended place of confinement, or of such material that is illegally diverted from its intended place of confinement, in amounts offsite, or causing radiation levels offsite, which the Commission determines to be substantial, and which the Commission determines has resulted or will result in substantial damages to persons offsite or property offsite.... As used in this subsection, 'offsite' means away from 'the location' or 'the contract location' as defined in the applicable Commission indemnity agreement, entered into pursuant to section 170."

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[18] Most notably, the site-related aspects of the definition of "extraordinary nuclear occurrence" quoted above.

[19] *Cf.* *Power Reactor Development Corp.* v. *International Union*, 367 U.S. 396, 408 (1961).

> "q. The term 'nuclear incident' means any occurrence, including an extraordinary nuclear occurrence, within the United States causing, within or outside the United States, bodily injury, sickness, disease, or death, or loss of or damage to property, or loss of use of property, arising out of or resulting from the radioactive, toxic, explosive, or other hazardous properties of source, special nuclear, or byproduct material, including such material that is illegally diverted from its intended place of confinement...."

These amended definitions, when read with other relevant provisions of the Act, were intended to extend Price-Anderson coverage to damages caused by illegal acts, such as sabotage or theft. As Senator Ribicoff stated during Senate floor debate --

> "My amendment insures that the public is as well protected by these [Price-Anderson] indemnity provisions from the consequences of nuclear theft as it is from the consequences of a nuclear accident." 120 Cong. Rec. S 14584 (daily ed.).

Senator Ribicoff was proceeding on the assumption that the present Price-Anderson system provides compensation "only for victims of a nuclear industry accident." Id. As discussed in the previous section, we believe that the present system is not limited to accidents, but that it extends to sabotage at a site or in the course of planned transportation. The Ribicoff amendment would, of course, reinforce that conclusion. In addition, however, the amendment clearly was intended to extend present coverage to the successful theft situation, where radiation or explosion damage emanates from a location remote from a reactor site or planned transportation route. It is possible, however, that the amendment would not fully achieve that result.

The Price-Anderson system is constructed on the assumption that damages will emanate from an identifiable licensed activity. Consistent with that assumption, insurance and indemnity agreements are executed with reference to a specific activity. In order to recover under Price-Anderson, a claimant must prove damages and a causal relationship between them and a particular licensed activity. But in a case of successful nuclear theft, it might be impossible to determine which licensee, if any, was the victim of the theft. In such a situation, the Ribicoff amendment would not as a practical matter operate to extend Price-Anderson coverage.

In addition to this practical question, the Ribicoff amendment raises difficult policy questions which we next discuss in relation to alternative approaches to the problem.

IV. ALTERNATIVE APPROACHES TO THE PROBLEM

A program of public protection against risks of nuclear sabotage and theft could involve payments by licensees, the insurance pools, the federal government, or some combination of the three. The basic policy considerations applicable to any approach may be summarized before separate discussion of the advantages and disadvantages of particular approaches. We turn first, however, to a factor which, in our view, should not control the policy choice.

A premise of the Ribicoff amendment was that it would motivate licensees to upgrade safeguards. Senator Ribicoff pointed out that the insurance companies would retain the option of extending or refusing coverage and that "insurance companies will be reluctant to cover nuclear thefts if safeguards are inadequate." 120 Cong. Rec. S 14586 (daily ed.).

The nuclear liability insurance pools have raised questions about this aspect of the Ribicoff amendment. As one of the pools states --

> We doubt that this indirect technique would prove to be successful. Two basic assumptions on which it rests are suspect. The first is that the threat of liability acts as a deterrent to careless behavior or as a stimulus to extraordinary care. Many would doubt the truth of this proposition. Whatever validity it may have would seem to vanish if the threat of loss were transferred to insurers or diffused by industry-wide assessments.
>
> The second assumption implicit in the proposal is that the standards private insurers would accept for safeguarding nuclear material are the appropriate standards for protecting the public. Insurers would be the first to acknowledge that they have no special expertise that would warrant reliance on their judgment for such a purpose.
>
> In short, we do not feel there is any justification for imposing absolute liability upon the nuclear industry for the purpose of upgrading safeguards. We believe that the question of appropriate safeguards against the theft of nuclear material should be resolved by the more direct method of analyzing the hazards at each step in the production and utilization process and developing specific responses. 20/

Although we believe that insurance industry scrutiny of safeguards could have beneficial effects, we do not believe that heavy reliance should be placed upon that factor as a means of insuring effective safeguards. Safeguards standards are an express statutory responsibility of the Commission. Whatever impact the insurance industry may have upon safeguards, ultimately, it is for the Commission to develop and promulgate effective standards and to see to it that they are carried out to the letter by every affected licensee.

20/ Memorandum of NELIA, Appendix C, pp. 2-3.

As we view it, a basic policy question presented by any approach to the present problem is: who shall bear the cost? The protection scheme provided by the present Price-Anderson Act divides costs between the nuclear industry and, potentially, the federal government. That scheme was adopted in 1957 to protect the public and at the same time to give a fledgling industry protection against heavy liabilities for low probability but high consequence accidents, thereby removing a barrier to private industry participation in the development of nuclear power. As the industry has developed toward maturity, the continuing need for this unique government indemnity system for a particular private industry has been increasingly called into question. Accordingly, the Price-Anderson amendments passed last year -- but vetoed by the President for an unrelated reason -- adopted the approach of phasing out governmental indemnity in the near future and substituting a two-layer insurance scheme under which licensees would bear substantially the full cost, with a limitation on liability which would "float" upward as new facilities were licensed.

A developed, private-enterprise industry should, as a general proposition, pay the costs for protection against risks of accidents entailed in pursuit of a commercial endeavor. The basic issue presented here is whether it is reasonable that, in addition to accidents, the costs of risks associated with acts of sabotage and theft should also be borne by private industry.

As noted previously, the Price-Anderson system assumes that damages could be identified with a particular licensee, and that assumption could break down in the case of successful nuclear theft. In that situation, there may be an element of arbitrariness in assigning the full cost of the loss to private industry. The material in question may have been stolen from the federal government or from a federal contractor. Or it may have been smuggled into this country from abroad. To be sure, it may be reasonable, depending upon the circumstances, to presume that the material came from private industry. But it nevertheless may be argued that the government should assume at least a portion of the costs in a situation where damages result from nuclear materials the source of which cannot be proved. 21/

The case for a reasonable relationship between cost and responsibility has a broader dimension. The justification for imposing on licensees the full cost of protection against accidents -- as under last year's proposed modification of Price-Anderson -- is that licensees may reasonably be held accountable for them. Accidents are "their fault." The waiver of defenses feature of the Act merely recognizes that it may be difficult to prove "fault" in the traditional legal sense, and that, under all the circumstances, placing the burden on the public would be unfair.

21/ Imposition of the full costs of damages flowing from such situations could conceivably raise constitutional questions. By hypothesis, no specific licensee would be liable for the damages. And, in view of the possibility that the materials may have been stolen from a non-industry source, it is doubtful whether liability could be imposed on the industry as a whole. Compare *Hall v. E. I. DuPont De Nemours & Co., Inc.*, 345 F. Supp. 353, 378-381 (E.D.N.Y., 1972), where plaintiffs sought to impose joint liability on all major domestic manufacturers of blasting caps in accident cases involving unidentifiable blasting caps. The fact that neither a specific licensee nor the industry as a whole would otherwise be liable is not necessarily dispositive. The "omnibus coverage" feature of the present Price-Anderson scheme (see p. 10, supra) contemplates that third persons over whom licensees have no control are protected by the insurance purchased by the licensee. Such costs may be justifiably imposed by government as costs of doing business where, at a minimum, it is the licensee's material that causes the damage. But where, as in the situation hypothesized, it cannot even be shown that the material causing the damage came from private industry, it seems questionable whether the full costs of such damages could be imposed on industry as a condition of doing business.

It is arguable that this reasoning is not fully applicable to sabotage and theft risks, as distinguished from accidents. It is one thing to require a licensee to warrant the safety of his equipment. That is his customary responsibility. It may be quite another thing, for example, to expect a licensee to repel an armed terrorist attack. This observation, of course, is applicable in part to the present Price-Anderson system which, as we have shown, covers damages that might flow from sabotage at a site or in the transportation of nuclear material.

At the present time, licensees bear the major portion of safeguards costs and responsibilities, subject to Commission standards and inspections. The Commission's ongoing safeguards studies -- relating to the possible widespread use of recycled plutonium and to the desirability of a federal security agency to perform safeguards functions -- may indicate the appropriateness of substantial shifts in safeguards responsibilities between licensees and the federal government. The results of these studies, therefore, may also have a bearing on the appropriate allocation of the costs of protecting the public against risks of sabotage and theft.

Another policy question related to the present problem is whether Price-Anderson coverage (or some other form of protection) should extend to payment of extortion demands based upon threats of use of stolen materials, and payment of consequential damages -- such as evacuation costs -- flowing from such threats. The present Price-Anderson Act would not reach such payments because the definition of "nuclear incident" (section 11(q)) refers only to actual damages to persons or property resulting from the hazardous properties of nuclear materials. While the issue is debatable, in our judgment, a formal system for paying such extortion demands should not be established. Such a system could have the effect of encouraging nuclear extortion. However, consideration might be given to covering consequential damages flowing from extortion threats.

In the light of these generally applicable policy considerations, we turn to an examination of the available approaches to the problem.

1. Ad hoc Compensation Legislation for Particular Incidents. Under this approach, Congress need take no action at this time. Legislation providing compensation for damages arising from an incident not covered by Price-Anderson -- such as a successful theft of nuclear materials -- could be enacted if and when such an event occurs. This is what happened eventually in the wake of the Texas City disaster. Following the Supreme Court's decision in the Dalehite case that the federal government was not liable for the Texas City damages, the Congress enacted a special claims statute in recognition of its "compassionate responsibility." 69 Stat. 707-709. The statute authorized the Secretary of the Army to process and pay claims for death, bodily injury and property damage. However, individual claims in each category were limited to $25,000.

The principal advantage of this approach is that it obviates the need to establish in advance elaborate compensation machinery to cover a highly speculative future event. As contrasted with an insurance scheme, there would be no need to set necessarily somewhat arbitrary premiums with reference to a largely unquantifiable hazard -- a drawback also applicable to the present Price-Anderson system. Rather, Congress could tailor the remedy to fit the facts of the case.

There are disadvantages to this approach, principally the prospect of substantial delay in payment of claims. In the Texas City case, the claims statute was enacted in 1955, more than eight years after the disaster. By contrast, the present Price-Anderson scheme contemplates rapid payment of claims, even authorizing partial payments before final determination of total claims. Another disadvantage is the uncertainty in whether a future Congress would respond fully to the need. Assistance extended as a matter of grace may fall short of damages actually sustained, as evidenced by the limitations on payment contained in the Texas City legislation. Furthermore, under this approach it may not be possible to impose any liability on a licensee after the fact in the event of an incident involving licensed material.

2. Extension of Price-Anderson Coverage to Damages Arising out of Successful Nuclear Theft. As previously described, this was the intention of the Ribicoff amendment. The principal advantage of this approach is that it would provide a relatively quick and certain remedy for injured members of the public -- at least where the source of the material could be identified with a particular insured licensee.

A possible practical disadvantage of this approach has been discussed previously. There could be a case of successful nuclear theft where it may be impossible to attribute the nuclear material to a particular facility. In such a case, the Price-Anderson scheme of insurance policies and indemnity agreements running to particular licensees would not afford coverage.

Under the present Price-Anderson system, insurance industry participation is voluntary. Accordingly, another possible disadvantage of this approach is that the insurance industry may be unwilling to extend coverage to the successful theft and similar hazards. The attached industry position papers suggest a possible unwillingness on their part to provide the same degree of protection provided under the present system. As a matter of constitutional law, we believe that the Congress probably could require the industry to insure against these hazards, assuming the adequacy of premiums and overall reasonableness of the statutory scheme. [22/] But such mandatory participation would represent a marked departure from the present Price-Anderson scheme, and raise separate practical and policy questions.

3. A Separate Insurance System to Cover Theft and Sabotage. The practical problem that a simple extension of Price-Anderson might not cover damages arising from a successful nuclear theft might be met by establishing a "pooling" insurance scheme, under which the source of the material would be irrelevant. Such a scheme might also include sabotage risks covered by the present Price-Anderson system. Although transfer of sabotage risks to such an insurance pool is not necessitated by the source identification problem, similar factors would govern the insurance industry's assessment of both theft and sabotage risks, and, consequently, the setting of premiums.

Assuming the practicality of this approach, and the willingness of the liability pools to underwrite substantial coverage, it would ensure certain and relatively prompt payment of claims. But this approach, of course, would impose the full costs of these risks on the nuclear industry. As previously suggested, the fairness of that allocation may be open to some question. Allocation of the cost of a "pooling" insurance scheme could be affected by the resolution of the basic safeguards issue -- should industry or government have primary responsibility? Should that issue be resolved in favor of government responsibility -- e.g. in the form of a federal security

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[22/] Such legislation would be within the power of Congress to regulate interstate commerce. The insurance industry is subject to this power. See United States v. Southeastern Underwriters Ass'n. 322 U.S. 533 (1944). The Supreme Court has upheld State compulsory assigned risk legislation, applicable to automobile insurers, over constitutional objections. See California State Automobile Association Inter-Insurance Bureau v. Maloney, 341 U.S. 105 (1951).

force -- then it might be appropriate that the government pay some share of the costs of an insurance program designed to cover a failure in the government's security system.

4. A "Deferred Premium" System. The Price-Anderson modification and extension bill passed last year (see p. 21, supra.) would have gradually substituted a "deferred premium" compensation system for the present government indemnity scheme which comes into operation after private insurance coverage is exhausted. The premiums would have been set by the Commission and payable only in the event of a nuclear incident for which private insurance proved to be inadequate. Such a system could be modified to make it applicable to all sabotage and theft incidents, including a "pooling" feature to cover an unidentifiable source incident. The basic insurance now carried by licensees under Price-Anderson would be inapplicable to sabotage and theft risks.

There are two principal advantages in this approach. First, it would not depend upon insurance industry funds, or, necessarily, upon the industry's participation. Second, it would not require advance commitment of substantial funds by the nuclear industry for a highly speculative event that may never occur.

A disadvantage of this approach, as recognized in last year's bill, is that some facility licensees might not be in a position to pay a substantial deferred premium when called upon to do so. In that situation, the government would have to pay the "premium", subject to possible reimbursement, if the system is to work.

Subject to the possibility of defaulting licensees, this approach, like the conventional insurance approach, imposes the entire cost on the nuclear industry. In so doing, it raises essentially the same policy questions.

5. Expand Government Indemnity Coverage Without Insurance Participation. The government could commit itself, in legislation, to pay the costs of damages caused in the future by sabotage or theft of nuclear materials. Administrative machinery for investigation, processing and payment of claims could be established in this Commission, or this function could be handled by private insurance companies under contracts with the Commission.

The advantages of this approach are relatively swift and certain payment of claims. As to possible disadvantages, this approach, of course, is contrary to the premise embodied in last year's Price-Anderson legislation -- that the government should phase out its indemnity role in the nuclear field. But, again, it is arguable that different considerations may apply to risks of sabotage and theft.

6. Government Indemnity Coverage Generally Applicable to Terrorist Activities. The government could commit itself, in legislation, to pay the costs of damages arising out of any terrorist activities, whether nuclear-related or otherwise. Administrative machinery for the handling of claims would have to be established, perhaps in a new federal agency.

Such a program would, of course, increase public protection against a risk that is becoming increasingly common on the world scene. An argument can be made for government indemnity, since it is the traditional function of government to protect against terrorist activities. This approach rejects the notion that nuclear risks should be singled out for special treatment. To the victim of a terrorist act, it may make little difference whether the cause was a nuclear explosion, a poisoned water supply, or a gun.

Such a broad indemnity proposal would raise a number of practical and policy questions. There would be definitional problems in defining "terrorist" activities so as to exclude street crime. And some may question whether street crime should be excluded, since protection against it is also a government function. Should the program be expanded in that direction, it would become quite costly. And in the case of an incident involving licensed nuclear materials, this approach could be viewed as discharging licensees from payment of an appropriate social cost of doing business.

APPENDIX "A"

CURRENT SECURITY REQUIREMENTS

A. Regulations Presently in Effect [1]

Fixed Sites

An applicant for a license to operate an enrichment or reprocessing facility is required to submit to the Commission a physical security plan with respect to vital equipment, vital areas and isolation zones,[2] and to demonstrate how the applicant will comply with the Commission's regulations in Chapter 10, Part 73 of the Code of Federal Regulations. (Physical Protection of Plants and Materials).[3] Each applicant for a license to operate a fuel processing and fabrication plant, wherein a strategic quantitiy of special nuclear material[4] will be processed, must submit a physical security plan and show how there will be compliance with 10 CFR Part 73.[5] The application will not be approved unless the plan is determined to be adequate.[6]

10 CFR Part 73 contains specifications for physical security of processing, fabrication and reprocessing plants which possess strategic quantities of special nuclear material. 10 CFR 73.50[7]

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[1] Regulations specifiy requirements which have the force and effect of law.

[2] Part 73 defines (1) a vital area as one which contains vital equipment within a structure, (2) vital equipment as any equipment, system, device or material, the failure, destruction or release of which could directly or indirectly endanger the public health and safety by exposure to radiation and (3) isolation zone as any area, clear of all objects which could conceal or shield an individual, adjacent to a physical barrier, which is monitored to detect the presence of individuals or vehicles.

[3] 10CFR 50.34 (c) which became effective December 6, 1973

[4] Uranium-235 (contained in uranium enriched to 20% or more in the uranium-235 isotope), uranium-233, or plutonium alone or in combination in a quantity of 5,000 grams or more computed by the formula, grams equals (grams contained U-235) + 2.5 (grams U-233 +grams plutonium).

[5] 10CFR 70.22 (h)

[6] 10CFR 70.23 (a) (10)

[7] Became effective March 6, 1974. See Annex 1 to Appendix A for full text.

specifies what is necessary in respect to armed guards, physical barriers and monitors, personnel access and searches, alarms, communications, response to abnormal activity and liaison with local law enforcement.

10 CFR 73.60[8/] contains additional provisions relating to physical security which are applicable to all licensees who possess strategic quantities of special nuclear material. The provisions cover access and exit controls, monitoring and alarms.

An applicant for a license to operate a commercial nuclear reactor must submit a physical security plan pertaining to vital equipment, vital areas and isolation zones.[9/] However, physical security specifications for commercial reactor sites, presently consisting almost entirely of light water reactors using low-enriched uranium,[10/] have been affected as licensing conditions in order to achieve the Commissions objectives, rather than through the Commission's rule making authority. Other types of reactors which use highly enriched uranium (such as High Temperature Gas Reactors) or plutonium, would come within the provisions of 10 CFR 73.60 .

In-Transit

Licensees who transport, or deliver to a carrier for transport, strategic quantities of special nuclear material, must comply with the

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[8/] Became effective March 6, 1974. See Annex 2 to Appendix A for full text.
[9/] 10 CFR 50.34 (c)
[10/] Low enriched uranium is adaptable for bomb making by increasing the enrichment by means of highly sophisticated technology.

requirements of 10 CFR 73.30 through 73.36.[11] These sections, which are set out in full in Annex 3 to Appendix A require such measures as hand to hand exchange of receipts, tamper indicating seals on containers, armed escorts, and communications capability. Special measures are particularized for shipments by road, air, rail and sea. For example, shipments by road must be protected by an armed escort vehicle or transported in a specially designed vehicle which reduces the vulnerability to diversion.

B. Guides [12]

Although the Code of Federal Regulations has not heretofore set forth specific requirements for the physical protection of nuclear power plants using low enriched uranium, since November 6, 1973 it has required applicants for licenses to submit security plans. The adequacy of these plans have been judged by comparison with AEC Regulatory Guide 1.17, "Protection of Nuclear Power Plants Against Industrial Sabotage" which adopts by reference ANSI[13] Standard N18.17" Industrial Security for Nuclear Power Plants" dated March 23, 1973.[14] Regulatory Guide 1.17 was published in June 1973. It specifies onsite, armed and uniformed guards, alarms annuciating in two stations, self-checking and tamper indicating alarms, tests of communications each shift and test of other security equipment at least every seven days.

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[11] Principal portions of these regulations became effective March 6, 1974

[12] Guides provide licensees with advice on measures which may be employed to meet Commission requirements. However, these measures do not necessarily exclude other means by which compliance can be effected. Guides are advisory rather than mandatory.

[13] American National Standards Institute, Inc.

[14] Final approval by ANSI 7/18/73. ANSI standards, which may not conform with Commission regulations or guides are developed by industry to establish acceptable standards of practice to meet predetermined needs so that industry can solve problems uniformly.

ANSI Standard 18.17 contemplates the establishment of three security areas for nuclear power plants, "increasing in the degree of protection provided as one approaches the vital equipment and facilities of the plant": (1) owner-controlled area, (2) protected area, and (3) vital area. Separate procedures for control, access, identification, searches, surveillance, enforcement, etc. are designated for each area. It is stipulated, "The security program shall provide for adequate manpower to respond to a security threat without affecting safe operation of the plant". And, "If the owner organization determines that arming the plant security force is desirable, members of the security force shall be trained in the use of their assigned weapons . . .". It is pointed out that electronic devices and response forces may be factors in reducing the number of guards otherwise required. Treatment is given to training, administrative control, communications and response forces.

Regulatory Guide 1.17 is a revision of, and superseded, Safety Guide 17 issued October 27, 1971. Safety Guide 17 provided counsel with respect to control of access, selection of personnel, monitoring of vital equipment and design and arrangement of equipment.[15]

C. Rules Pending Implementation.

Power Reactors

On November 13, 1974, the Commission published for public comment a number of amendments to 10 CFR Part 73[16] These amendments would require all nuclear power plant licensees (under Part 50) to meet standards of physical security similar to those which are currently required for fuel cycle facilities, regardless of the enrichment or type of material used in the reactor. Additional protective measures would be required with respect to (1) hardening[17/] of the control room, (2) access, identification and personnel search procedures, (3) vehicle cargo search, (4) hardening of containment, (5) hardening the central alarm station, and (6) a capability of remote observance of the isolation zone and clear area.

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[15] See Annex 3 to Appendix A for text of Safety Guide 17.

[16] Federal Register, Vol. 39, No. 220 - It was stated that the action was being taken "in view of the increase in terrorist activities and the general availability of information concerning possible use of special nuclear material as a basis of terrorist activities."

Transportation

Further amendments to 10 CFR Part 73 published for comment by the Commission on November 13, 1974 would require increased physical protection for shipments of strategic quantities of special nuclear material. 10 CFR 73.30 through 73.35 would be modified so as to require the following:

1. Outermost container or vehicle must be sealed by tamper-indicating seals.

2. Containers weighing less than 5,000 pounds may not be shipped by open conveyance.

3. Shipments by road must be either (1) in a vehicle which can be immobilized and has two guards in the cargo vehicle in addition to two guards in an escort vehicle, or (2) in

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[17/] A term which means providing greater penetration resistance.

an armored car containing two guards, accompanied by two guards in each of two escort vehicles, unless communication coverage is always available during the shipment in which case only two guards in one escort vehicle are required,

4. Shipments by air including exports must be made on US registered aircraft and accompanied by two guards.

5. Shipments by rail must be escorted by five guards.

6. Shipments by sea must be on American Flag vessels. Exports shall be accompanied by two guards.

7. All transfers of special nuclear material must be monitored by two guards.

APPENDIX "A"

§ 73.60 Additional requirements for the physical protection of special nuclear material at fixed sites.

In addition to the applicable requirements of § 73.50, each licensee who pursuant to the regulations in Part 70 of this chapter possesses at any site or contiguous sites subject to control by the licensee uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), uranium-233, or plutonium alone or in any combination in a quantity of 5,000 grams or more computed by the formula, grams=(grams contained U-235) + 2.5 (grams U-233 + grams plutonium) shall protect the special nuclear material from theft or diversion as follows:

(a) *Access requirements.* (1) Special nuclear material shall be stored or processed only in a material access area. No activities other than those which require access to special nuclear material or equipment employed in the process, use, or storage of special nuclear material, shall be permitted within a material access area.

(2) Material access areas shall be located only within a protected area to which access is controlled.

(3) Special nuclear material not in process shall be stored in a vault equipped with an intrusion alarm or in a vault-type room, and each such vault or vault-type room shall be controlled as a separate material access area.

(4) Enriched uranium scrap in the form of small pieces, cutings, chips, solutions or in other forms which result from a manufacturing process, contained in 30-gallon or larger containers, with a uranium-235 content of less than 0.25 grams per liter, may be stored within a locked and separately fenced area which is within a larger protected area provided that the storage area is no closer than 25 feet to the perimeter of the protected area. The storage area when unoccupied shall be protected by a guard or watchman who shall patrol at intervals not exceeding 4 hours, or by intrusion alarms.

(5) Admittance to a material access area shall be under the control of authorized individuals and limited to individuals who require such access to perform their duties.

(6) Prior to entry into a material access area, packages shall be searched for devices such as firearms, explosives, incendiary devices, or counterfeit substitute items which could be used for theft or diversion of special nuclear material.

(7) Methods to observe individuals within material access areas to assure that special nuclear material is not diverted shall be provided and used on a continuing basis.

(b) *Exit requirement.* Each individual, package, and vehicle shall be searched for concealed special nuclear material before exiting from a material access area unless exit is into a contiguous material access area. The search may be carried out by a physical search or by use of equipment capable of detecting the presence of concealed special nuclear material.

(c) *Detection aid requirement.* Each unoccupied material access area shall be locked and protected by an intrusion alarm on active status. All emergency exits shall be continuously alarmed.

(d) *Testing and maintenance.* Each licensee shall test and maintain intrusion alarms, physical barriers, and other devices utilized pursuant to the requirements of this section as follows:

(1) Intrusion alarms, physical barriers, and other devices used for material protection shall be maintained in operable condition.

(2) Each intrusion alarm shall be inspected and tested for operability and required functional performance at the beginning and end of each interval during which it is used for material protection, but not less frequently than once every seven (7) days.

(e) This section is effective March 6, 1974.

ANNEX 1 (Continued)

(5) Individuals not employed by the licensee shall be escorted by a watchman, or other individual designated by the licensee, while in a protected area and shall be badged to indicate that an escort is required. In addition, each individual not employed by the licensee shall be required to register his name, date, time, purpose of visit, employment affiliation, citizenship, name and badge number of the escort, and name of the individual to be visited. Except for a driver of a delivery or service vehicle, an individual not employed by the licensee who requires frequent and extended access to a protected area or a vital area need not be escorted provided such individual is provided with a picture badge, which he must receive upon entrance into the protected area and which he must return each time he leaves the protected area, which indicates (i) nonemployee-no escort required, (ii) areas to which access is authorized, and (iii) the period for which access has been authorized.

(6) No vehicles used primarily for the conveyance of individuals shall be permitted within a protected area except under emergency conditions.

(7) Keys, locks, combinations, and related equipment shall be controlled to minimize the possibility of compromise and promptly changed whenever there is evidence that they have been compromised. Upon termination of employment of any employee, keys, locks, combinations, and related equipment to which that employee had access shall be changed.

(d) *Detection aids.* (1) All alarms required pursuant to this part shall annunciate in a continuously manned central alarm station located within the protected area and in at least one other continuously manned station, not necessarily within the protected area, such that a single act cannot remove the capability of calling for assistance or otherwise responding to an alarm. All alarms shall be self-checking and tamper indicating. The annunciation of an alarm at the onsite central alarm station shall indicate the type of alarm (e.g., intrusion alarm, emergency exit alarm, etc.) and location. All intrusion alarms, emergency exit alarms, alarm systems, and line supervisory systems shall at minimum meet the performance and reliability levels indicated by GSA Interim Federal Specification W-A-00450 B (GSA-FSS).

(2) All emergency exits in each protected area and each vital area shall be alarmed.

(e) *Communication requirements.* (1) Each guard or watchman on duty shall be capable of maintaining continuous communication with an individual in a continuously manned central alarm station within the protected area, who shall be capable of calling for assistance from other guards and watchmen and from local law enforcement authorities.

(2) The alarm stations required by paragraph (d)(1) of this section shall have conventional telephone service for communication with the law enforcement authorities as described in paragraph (e)(1) of this section.

(3) To provide the capability of continuous communication, two-way radio voice communication shall be established in addition to conventional telephone service between local law enforcement authorities and the facility and shall terminate at the facility in a continuously manned central alarm station within the protected area.

(4) All communications equipment, including offsite equipment, shall remain operable from independent power sources in the event of loss of primary power.

(f) *Testing and maintenance.* Each licensee shall test and maintain intrusion alarms, emergency alarms, communications equipment, physical barriers, and other security related devices or equipment utilized pursuant to this section as follows:

(1) All alarms, communications equipment, physical barriers, and other security related devices or equipment shall be maintained in operable and effective condition.

(2) Each intrusion alarm shall be functionally tested for operability and required performance at the beginning and end of each interval during which it is used for security, but not less frequently than once every seven (7) days.

(3) Communications equipment shall be tested for operability and performance not less frequently than once at the beginning of each security personnel work shift.

(g) *Response requirement.* (1) The licensee shall establish liaison with local law enforcement authorities. In developing his physical security plan, the licensee shall take account of the probable size and response time of the local law enforcement authority assistance.

(2) Upon detection of abnormal presence or activity of persons or vehicles within an isolation zone, a protected area, a material access area or a vital area, or upon evidence of intrusion into a protected area, a material access area or a vital area, the facility security organization shall (i) determine whether or not a threat exists, (ii) assess the extent of the threat, if any, and (iii) take immediate measures to neutralize the threat, either by appropriate action by facility guards or by calling for assistance from local law enforcement authorities, or both.

(h) This section is effective March 6, 1974.

§ 73.50 Requirements for physical protection of licensed activities.

In addition to any other requirements of this part, each licensee who is authorized to operate a fuel reprocessing plant pursuant to Part 50 of this chapter or who possesses or uses uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), uranium-233, or plutonium alone or in any combination in a quantity of 5000 grams or more computed by the formula, grams = (grams contained U-235) + 2.5 (grams U-233 + grams plutonium), other than in the operation of a nuclear reactor licensed pursuant to Part 50 of this chapter, shall comply with the following.

(a) *Physical security organization.* (1) The licensee shall establish a security organization, including guards, to protect his facility against industrial sabotage and the special nuclear material in his possession against theft.

(2) At least one supervisor of the security organization shall be on site at all times.

(3) The licensee shall establish, maintain and follow written security procedures which document the structure of the security organization and which detail the duties of guards, watchmen, and other individuals responsible for security.

(4) The licensee shall not permit an individual to act as a guard or watchman unless such individual has been properly trained and equipped and has qualified by demonstrating: (i) An understanding of the licensee's security procedures, and (ii) the ability to execute all duties required of him by such procedures. Each guard and watchman shall be requalified at least annually. Such requalification shall be documented.

(b) *Physical barriers.* (1) The licensee shall locate vital equipment only within a vital area, which, in turn, shall be located within a protected area such that access to vital equipment requires passage through at least two physical barriers. More than one vital area may be within a single protected area.

(2) The licensee shall locate material access areas only within protected areas such that access to the material access area requires passage through at least two physical barriers. More than one material access area may be within a single protected area.

(3) The physical barrier at the perimeter of the protected area shall be separated from any other barrier designated as a physical barrier within the protected area, and the intervening space monitored or periodically checked to detect the presence of persons or vehicles so that the facility security organization can respond to suspicious activity or to the breaching of any physical barrier.

(4) An isolation zone shall be maintained around the physical barrier at the perimeter of the protected area and any part of a building used as part of that physical barrier. The isolation zone shall be monitored to detect the presence of individuals or vehicles within the zone so as to allow response by armed members of the licensee security organization to be initiated at the time of penetration of the protected area. Parking facilities, both for employees and visitors, shall be located outside the isolation zone.

(5) Isolation zones and clear areas between barriers shall be provided with illumination sufficient for the monitoring required by paragraph (b) (3) and (4) of this section, but not less than 0.2 foot candles.

(c) *Access requirements.* The licensee shall control all points of personnel and vehicle access into a protected area, including shipping or receiving areas, and into each vital area. Identification of personnel and vehicles shall be made and authorization shall be checked at such points.

(1) At the point of personnel and vehicle access into a protected area, all individuals, except employees who possess an AEC personnel security clearance, and all hand-carried packages shall be searched for devices such as firearms, explosives, and incendiary devices, or other items which could be used for industrial sabotage. The search shall be conducted either by a physical search or by the use of equipment capable of detecting such devices. Employees who possess an AEC personnel security clearance shall be searched at random intervals. Subsequent to search, drivers of delivery and service vehicles shall be escorted at all times while within the protected area.

(2) All packages being delivered into the protected area shall be checked for proper identification and authorization. Packages other than hand-carried packages shall be searched at random intervals.

(3) A picture badge identification system shall be used for all individuals who are authorized access to protected areas without escort.

(4) Access to vital areas and material access areas shall be limited to individuals who are authorized access to vital equipment or special nuclear material and who require such access to perform their duties. Authorization for such individuals shall be provided by the issuance of specially coded numbered badges indicating vital areas and material access areas to which access is authorized. Unoccupied vital areas and material access areas shall be protected by an active intrusion alarm system.

ANNEX 3

PHYSICAL PROTECTION OF SPECIAL NUCLEAR MATERIAL IN TRANSIT

§ 73.30 General requirements.

(a) Except as specified in § 73.36(a) or as otherwise authorized pursuant to § 73.30(f), each licensee who transports or who delivers to a carrier for transport either uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), uranium-233, or plutonium, or any combination of these materials, which is 5,000 grams or more computed by the formula, grams=(grams contained U-235)+2.5 (grams U-233+grams plutonium), shall make arrangements to assure that such special nuclear material will, if a common or contract carrier is used, be transported under the established procedures of a carrier which provides a system for the physical protection of valuable material in transit and requires an exchange of hand-to-hand receipts at origin and destination and at all points enroute where there is a transfer of custody.

(b) Transit times of shipments other than those specified in § 73.1(b)(3) shall be minimized and routes shall be selected to avoid areas of natural disaster or civil disorders. Such shipments shall be preplanned to assure that deliveries occur at a time when the receiver at the final delivery point is present to accept receipt of shipment.

(c) Special nuclear material shall be shipped in containers which are sealed by tamper indicating type seals. The container shall also be locked if it is not in another container or vehicle which is locked. If inspection of the container or vehicle is not required by State or local authorities before final destination, the outermost container or vehicle shall also be sealed by tamper indicating type seals. No container weighing 500 pounds or less shall be shipped in open trucks, railroad flat cars or box cars and ships. This paragraph does not apply to shipments of quantities specified in § 73.1(b)(3).

(d) When guards are used pursuant to §§ 73.31(c)(1), 73.31(c)(2), 73.33 and 73.35, the licensee shall not permit an individual to act as a guard unless there is documentation that the individual has been qualified by demonstrating an understanding of his duties and responsibilities. The licensee or his agent shall have documentation that guards have been requalified annually.

(e) By January 7, 1974, each licensee shall submit a plan outlining the procedures that will be used to meet the requirements of §§ 73.30 through 73.36 and 73.70(g) including a plan for the selection, qualification, and training of armed escorts, or the specification and design of a specially designed truck or trailer as appropriate. This plan shall be followed by the licensee after March 6, 1974.

(f) A licensee or applicant for a license may apply to the Commission for approval of proposed procedures for transport of special nuclear material in a manner not otherwise authorized by the regulations of this part. Such application shall include a description and quantity of the special nuclear material involved, the origin and destination, the carriers to be used, the expected time in transit, the number of transfer points, the communications to be used, the vehicle visual identification, and the cargo security and surveillance measures to be used.

(g) Paragraphs (b), (c), (d), and (f) of this section are effective March 6, 1974.

§ 73.31 Shipment by road.

(a) All shipments by road shall be made without any scheduled intermediate stops to transfer special nuclear material or other cargo between the facility from which it is shipped and the facility of the receiver.

(b) All motor vehicles used to transport special nuclear material shall be equipped with a radiotelephone which can communicate with a licensee or his agent. The licensee or agent with whom communications shall be maintained for different segments of the shipment shall be predesignated before a shipment is made. Calls to such licensee or agent shall be made at least every 2 hours when radiotelephone or conventional telephone coverage along the route is available to relay position and projected route. Call frequency may extend up to 5 hours when radiotelephone or conventional telephone coverage is not available along the preplanned route, at which time a conventional telephone call shall be made. In the event no call is received in accordance with these requirements, the licensee or his agent shall immediately notify an appropriate law enforcement authority and the appropriate Atomic Energy Commission Regulatory Operations Regional Office listed in Appendix A of this part.

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(c) A shipment shall be accompanied by at least two people in the vehicle containing the shipment, which may be two drivers or one driver and an authorized individual. The vehicle containing the shipment shall be under continuous visual surveillance, or one of the drivers or authorized individuals shall be in the cab of the vehicle, awake, and not in a sleeper berth. The shipment shall be further protected by one of the following methods:

ANNEX 3 (Continued)

(1) An armed escort consisting of at least two guards shall accompany the shipment in a separate escort vehicle. Escorts shall maintain continuous vigilance for the presence of conditions or situations which might threaten the security of the shipment, take such action as circumstances might require to avoid interference with continuous safe passage of the cargo vehicle, provide assistance to, or summon aid for crew of cargo vehicles in case of emergency, check seals and locks at each stop where time permits, and observe the cargo vehicle and adjacent areas during stops or layovers. Continuous radio communication capability shall be provided between the cargo vehicle and the escort vehicle. Escort vehicles shall also be equipped with a radiotelephone. The licensee may use his own employees as armed escorts or he may use an agent. Only the driver is required in the vehicle containing special nuclear material for shipments involving an average of less than an hour in transportation, if communication is maintained during the course of the shipment with the licensee or agent monitoring the shipment.

(2) The shipment shall be made in a specially designed truck or trailer which reduces the vulnerability to diversion. Design features of the truck or trailer shall permit immobilization of the van and provide barriers or deterrents to physical penetration of the cargo compartment unless armed guards are also used in which case immobilization of the vehicle is not required.

(d) Transfers to and from other modes of transportation shall be in accordance with § 73.35.

(e) Vehicles shall be marked on top with identifying letters or numbers which will permit identification of the vehicle under daylight conditions from the air in clear weather at 1,000 feet above ground level. The same code of letters and numbers as those used on the top shall also be marked on the sides and rear of the vehicle to permit identification from the ground.

(f) This section is effective March 6, 1974.

§ 73.32 Shipment by air.

(a) Except as specifically approved by the Atomic Energy Commission, no shipment of special nuclear material shall be made in passenger aircraft in excess of (1) 20 grams or 20 curies, whichever is less, of plutonium or uranium-233, or (2) 350 grams of uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope).

(b) In shipments on cargo aircraft of either uranium-235 (contained in uranium enriched to 20 percent or more in the U-235 isotope), uranium-233 or plutonium, or any combination of these materials which is 5,000 grams or more computed by the formula, grams=(grams contained U-235) + 2.5(grams U-233 + grams plutonium), transfers shall be in accordance with § 73.36. Transfers shall be minimized.

(c) Export shipments shall be escorted by an unarmed authorized individual, who may be a crew member, from the last terminal in the United States until the shipment is unloaded at a foreign terminal. He shall perform monitoring duties at foreign terminals as described in § 73.36.

(d) Paragraph (c) of this section is effective March 6, 1974.

§ 73.33 Shipment by rail.

(a) A shipment by rail shall be escorted by two guards, in the shipment car or an escort car of the train, who shall keep the shipment cars under observation and who shall detrain at stops when practicable and time permits to guard the shipment cars under observation, and check car or container locks and seals. Radiotelephone communication shall be maintained with a licensee or his agent to relay position every 2 hours or less, and at scheduled stops in the event that radiotelephone coverage was not available in the last 2 hours before the stop. The licensee or agent with whom communications shall be maintained for different segments of the shipment shall be predesignated before a shipment is made. In the event no call is received in accordance with these requirements, the licensee or his agent shall immediately notify an appropriate law enforcement authority and the appropriate Atomic Energy Commission Regulatory Operations Regional Office listed in Appendix A of this part.

(b) Transfers shall be in accordance with § 73.35.

(c) This section is effective March 6, 1974.

§ 73.34 Shipment by sea.

(a) Shipments shall be made on vessels making the minimum ports of call. Transfers to and from other modes of transportation shall be in accordance with § 73.36. There shall be no scheduled transfers to other ships. At domestic ports of call where other cargo is transferred, the shipments shall be protected in accordance with § 73.35(a).

(b) The shipment shall be placed in a secure compartment which is locked and sealed. Locks and seals shall be periodically inspected in transit, if accessible, by an escort or crew member.

(c) Export shipments shall be escorted by an unarmed authorized individual, who may be a crew member, from the last port in the United States until the shipment is unloaded at a foreign port. He shall perform monitoring duties at foreign ports as described in § 73.35.

(d) Ship-to-shore communications shall be available, and a ship-to-shore contact shall be made every twenty-four hours to relay position information, and the status of the shipment, which shall be determined by a daily inspection where possible. This information shall be sent, as often as it is available, to the licensee or his agent who makes the arrangements for the protection of the shipment.

(e) This section is effective March 6, 1974.

§ 73.35 Transfer of special nuclear material.

All transfers shall be monitored by a guard. An alternate guard shall be designated at all transfer points to substitute, if necessary. Monitoring of special nuclear material transfers shall be conducted as follows:

(a) At scheduled intermediate stops where special nuclear material is not scheduled for transfer, the guard shall observe the opening of the cargo compartment and assure that the shipment is not removed. The guard shall maintain continuous visual surveillance of the cargo compartment. Continuous visual surveillance of the cargo compartment shall be maintained up to the time the vehicle is ready to depart. The guard shall observe the vehicle until it has departed, and shall notify the licensee or his agent of the latest status immediately thereafter.

(b) At points where special nuclear material is transferred from a vehicle to storage, from one vehicle to another, or from storage to a vehicle, the guard shall keep the shipment under continuous visual surveillance by observing the opening of the cargo compartment of the incoming vehicle and assuring that the shipment is complete by checking locks and/or seals. Continuous visual surveillance of a shipment shall be maintained at all times it is in the terminal or in storage. Shipments shall be preplanned in order to avoid storage times in excess of 24 hours. Continuous visual surveillance of the cargo compartment shall be maintained up to the time the vehicle is ready to depart from the terminal. The guard shall observe the vehicle until it has departed, and shall notify the licensee or his agent of the latest status immediately thereafter.

(c) The guard shall be required to immediately notify the carrier and the licensee who made the arrangements for protection of special nuclear material of any deviation from or attempted interference with schedule or routing.

(d) This section is effective March 6, 1974.

§ 73.36 Miscellaneous requirements.

(a) Each licensee who takes delivery of special nuclear material free on board (f.o.b.) the point at which it is delivered to a carrier for transport shall make the arrangements to assure that such special nuclear material will be protected in transit as prescribed in §§ 73.30 through 73.35, rather than the person who delivers such shipment to the carrier for transport.

(b) Each licensee who imports special nuclear material shall make arrangements to assure that such material will be protected in transit as follows:

(1) An individual designated by the licensee or his agent, or as specified by a contract of carriage, shall confirm the container count and examine locks and/or seals for evidence of tampering, at the first place in the United States at which the shipment is discharged from the arriving carrier.

(2) The shipment shall be protected at the first terminal at which it arrives in the United States and all subsequent terminals as provided in §§ 73.30 through 73.35 and paragraphs (c) and (f) of this section.

(c)(1) Each licensee who delivers special nuclear material to a carrier for transport shall immediately notify the consignee by telephone, telegraph, or teletype, of the time of departure of the shipment, and shall notify or confirm with the consignee the method of transportation, including the names of carriers, and the estimated time of arrival of the shipment at its destination. (2) In the case of a shipment free on board (f.o.b.) the point where it is delivered to a carrier for transport, each licensee shall, before the shipment is delivered to the carrier, obtain written certification from the licensee who is to take delivery of the shipment at the f.o.b. point that the physical protection arrangements required by §§ 73.30 through 73.36 for licensed shipments have been made. When an AEC license-exempt contractor is the consignee of a shipment, the licensee shall, before the shipment is delivered to the carrier, obtain written certification from the contractor who is to take delivery of the shipment at the f.o.b. point that the physical protection arrangements required by AEC Manual Chapters 2401 or 2405 have been made. (3) Each licensee who delivers special nuclear material to a carrier for transport shall also make arrangements with the consignee to be notified immediately by telephone, telegraph, or teletype, of the arrival of the shipment at its destination.

(d) In addition to complying with the requirements specified in paragraphs (c) and (f) of this section, each licensee who exports special nuclear material shall comply with the requirements specified in §§ 73.30 through 73.35, as applicable, up to the first point where the shipment is taken off the vehicle outside the United States. The licensee shall also make arrangements with the consignee to be notified immediately by telephone and telegraph, teletype, or cable, of the arrival of the shipment at its destination, or of any such shipment that is lost or unaccounted for after the estimated time of arrival at its destination.

(e) Each licensee who receives a shipment of special nuclear material shall immediately notify the person who delivered the material to a carrier for transport of the arrival of the shipment at its destination. In the event such a shipment fails to arrive at its destination at the estimated time, the consignee, if a licensee, or in the case of an export shipment, the licensee who exported the shipment, shall immediately notify by telephone and telegraph, or teletype, the Director of the appropriate Atomic Energy Commission Regulatory Operations Regional Office listed in Appendix A of this part, and the licensee or other person who delivered the material to a carrier for transport. The licensee who made the physical protection arrangements shall also immediately notify by telephone and telegraph, or teletype the Director of the appropriate Atomic Energy Commission Regulatory Operations Regional office listed in Appendix A of the action being taken to trace the shipment.

(f) Each licensee who makes arrangements for physical protection of a shipment of special nuclear material as required by §§ 73.30 through 73.36 shall immediately conduct a trace investigation of any shipment that is lost or unaccounted for after the estimated arrival time and file a report with the Commission as specified in § 73.71. If the licensee who conducts the trace investigation is not the consignee, he shall also immediately report the results of his investigation by telephone and telegraph or teletype to the consignee.

(g) Paragraphs (a), (b), (c) and (d) of this section are effective March 6, 1974.

ANNEX 4

SAFETY GUIDE 17
SECTION C

" Means should be provided in nuclear plants, and procedures should be developed and implemented to reduce the opportunity for and mitigate the effects of successful industrial sabotage. Particular consideration should be given to control of access, selection of personnel, monitoring of vital equipment, and design and arrangement of equipment.

1. *Control of Access*—The means provided to control access by unauthorized persons to the plant site and to vital areas, buildings, and equipment within the nuclear power plant should include:
   - (a) A physical barrier, such as a fence, around the facility;
   - (b) Surveillance of this barrier, such as by roving patrols, closed-circuit television, or intrusion alarms;
   - (c) Guards at each point of access;
   - (d) Locks on vital equipment where consistent with other safety requirements;
   - (e) An organization plan that identifies the persons having line responsibility for security matters;
   - (f) Procedures for monitoring and controlling the access to and from the plant and the movement of persons within the plant by means such as badging of employees, signing in and out of visitors, providing escorts for visitors, and challenging the entry of unauthorized persons attempting to enter vital areas;
   - (g) Procedures for appropriate searching of visitors;
   - (h) Procedures for forbidding the entry of unauthorized vehicles and for searching vehicles entering site;
   - (i) Procedures associated with physical security to deal with emergencies at the plant;
   - (j) Procedures for dealing with potential dangers, such as bomb threats and civil disturbances, including provisions for timely notification of the proper authorities;
   - (k) Procedures for investigation of security incidents and for auditing of the security program.

2. *Selection of Personnel*-The means provided to assure a staff of reliable plant personnel should include:
   - (a) Establishment of employment standards and practices that provide for selection of competent, well-balanced individuals;
   - (b) Procedures for review of employee performance;
   - (c) Procedures for early detection of unusual behavioral patterns of employees, such as may result from drug abuse;
   - (d) Training of personnel with regard to plant security.
3. *Monitoring of Vital Equipment*–Means should be provided to monitor the status of vital equipment. Procedures should be developed and personnel trained to identify equipment that may have been disabled or whose status may have undergone unauthorized changes (e.g., a valve closed when it should be open).
4. *Design and Arrangement of Equipment*–Appropriate design features and equipment arrangements should be provided and be consistent with other safety requirements to reduce the opportunity for successful industrial sabotage.

Detailed security measures for the physical protection of the facility against industrial sabotage will be withheld from public disclosure as provided in §2.790 of the Commission's regulations in 10 CFR Part 2.

APPENDIX "B"

EVENTS BEARING UPON DEVELOPMENT AND EVOLUTION OF SECURITY REQUIREMENTS

A. 1960-1970

The first privately-owned commercial nuclear power plant became operational in 1960.[1] Until 1964, all nuclear fuel (special nuclear material) was owned, processed and fabricated by the Federal government, and all nuclear fuel used by the commercial reactors was leased from the Federal government. Legislation was enacted in 1964 permitting private persons, including reactor licensees to purchase and own special nuclear material.

Management concern for protection of valuable property, as well as the public safety, undoubtedly prompted the adoption of many customary industrial security measures for nuclear power plants in the early 1960 s. Before 1966 industrial sabotage was not generally considered as a separate threat because the effects of potential sabotage were deemed to be adequately protected by required safety measures.

Lumb Panel

In July 1966 the AEC formed a panel (Lumb Panel)[2] to conduct an independent review and appraisal of AEC safeguards policies and procedures for special nuclear materials. The report submitted by the panel on March 10, 1967 noted that it had been given its task "because of the growth of the nuclear industry, particularly the quickening pace of nuclear power commitments, and the advent of private ownership of special nuclear materials...".

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[1] Dresden. Nuclear Power Station, Unit 1 (August 1960)

[2] Ad Hoc Advisory Panel on Safeguarding Special Nuclear Material, chaired by R. F. Lumb.

The absence of any specific security requirements imposed by the AEC on licensees was highlighted by the Lamb Panel: "Until recently,[3] in the case of licensees the AEC has primarily relied upon the high intrinsic value of special nuclear materials and criminal penalties for safeguards". In contrast, for AEC contract operations, it said:

> "The Panel believes that the AEC generally has been responsive to its obligations, under the Atomic Energy Act, for safeguarding special nuclear materials. Over the past twenty years there has evolved a safeguards system applicable to AEC cost-type contractors which incorporates most of the essential elements for safeguarding special nuclear materials."

The Panel concluded that it was essential that "...an effective worldwide international safeguards system be established quickly" and recommended, among other things, (1) establishment of a high level AEC office to coordinate the safeguards program,[4] and (2) the development by AEC and licensees of minimum physical protection standards applicable to licensees.

1967 Florida Power and Light Decision

In early 1967 in connection with a challenge to the issuance of a construction permit to Florida Power and Light Company (Turkey Point reactors) the

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[3] On February 3, 1967 the Commission amended 10 CFR 70 to require each licensee authorized to possess enriched uranium-235 contained in uranium enriched to 20% or more in the uranium-235 isotope, uranium-233 or plutonium in an amount of 5,000 grams or more to submit a description of its material control and accounting program.

[4] An Office of Safeguards and Materials Management was established under the General Manager effective July 1, 1967. Also in 1967 a Division of Nuclear Materials Safeguards was established under the Director of Regulation.

Commission declared its expectation that the staff, "... in accordance with its practice. . . . assure that appropriate industrial security measures are provided for by the applicant". (emphasis added)[5/]

Department of Defense Responsibility

The Department of Defense was deemed to be responsible for protecting industrial facilities against destructive acts of foreign enemies. In response to inquiries by the Joint Committee on Atomic Energy, DOD wrote to then Chairman John O. Pastore on January 9, 1968, explaining the policies of DOD toward industrial facilities. The letter stated that the Army was responsible for developing physical security standards, for conducting surveys for assessing vulnerability to sabotage from foreign enemies and for providing guidance to industrial management. The letter observed that inherent safety features of power reactors make the release of fission products difficult, and "...if the goal is harm to the public, there are far more lethal means that concern us that can affect large numbers...". It was concluded that evaluation of threat potential indicated the present level of effort was adequate.

[5/] In February, 1967 the AEC gave notice of proposed rule making on "Exclusion of Attacks and Destructive Acts by Enemies of the United States in Determining the Issuance of Facility Licenses". (On September 26, 1967 this became 10CFR 50.13). As a consequence of the notice of proposed rulemaking, the Atomic Safety and Licensing Board asked the Commission for guidance on the inclusion of sabotage as a consideration in making findings on a grant of license. The Commission's Memorandum of Order, February 20, 1967, indicates that questions of sabotage potential, as bearing upon public health and safety, were indeed to be considered if in the realm of industrial (presumably of domestic origin) sabotage as opposed to sabotage of foreign origin, but at the operating license stage rather than construction stage. The Memorandum indicates the responsibility and discretion was with the staff to insure adequate safeguards in distinction to any particulars set forth by rule.

The McCullough Report [6]

This report was prepared for the AEC by an independent contractor for the purpose of analyzing the vulnerability of nuclear power plants to industrial sabotage, assessing the likelihood such acts would adversely affect public safety and recommending desirable safeguard measures.

The report found a paucity of literature bearing upon the subject. It found there were virtually no reports on the vulnerability of generating stations to intentional damage. The consensus from numerous interviews was that industrial sabotage had not constituted a serious problem in the U.S. and that the probability of sabotage to nuclear reactors was "extremely low". It was believed that "protective and control devices" in common use to guard against "accidents or operator error" virtually precluded any sabotage. Mr. Walker L. Cisler, Chairman of the Board of Detroit Edison Company was quoted:

> "Each of the massive and rugged barriers that provide protection from nuclear radiation would in turn protect the heart of the reactor from the saboteur. He would have neither the time, the skill, nor the tools to do an effective job under any plausible conditions."

On the basis of many interviews, the report determined ". . .there have apparently been no recognized or acknowledged incidents of significant sabotage within any generating station in the United States". The burden of the report (as well as the apparent view then prevailing within the industry toward the risk of sabotage) may be discerned from the following remarks:

6/The contractor was Southern Nuclear Engineering, Inc. C. Roger McCullough, Stanley E. Turner and Ray L. Lyerly prepared the report, dated July 1968.

> ". . . it remains to be determined if the consequences of industrial sabotage could reasonably be expected to constitute a hazard to the health and safety of the public." (p. 13)
>
> "Thus, consequences of sabotage - induced accidents would be no more serious than those of accidents which are routinely considered and protected against, unless a significant fraction of the redundant safeguards equipment is simultaneously sabotaged . . . ." (p. 14)
>
> ". . . no historical precedents for sabotage to generating stations have been found to justify the anticipation of sabotage . . ." (p. 16)
>
> "The probability of a saboteur having the required prerequisites . . . is believed to be so low that sabotage of a magnitude capable of endangering the public is virtually incredible." (p. 17)

It was recognized by the report that civil disturbances had assumed greater prominence in the previous few years, which actions might increase the threat of sabotage. Damages experienced by electric utilities during urban riots were to poles, wiring and transformers rather than generators. While it was found that almost all generating stations employed some form of plant security, including fences and communications, some used guards who were but unarmed watchmen.

Three recommendations were made by the McCullough report: (1) review plant security measures to assure they adequately deter sabotage; (2) plant procedures should explain what will be done in the event of civil disturbance; and (3) provide assurance that sensitive valves will be monitored to preclude improper positioning.

APPENDIX "B"

AEC Symposia

The first AEC Symposium on Safeguards Research and Development was held in June 1967[7] and a second was held in October 1969.[8] At these meetings some attention was given to plant security; however, material control and accounting and transportation security received predominant attention.

It was increasingly recognized at the time of the second symposium that SNM was more vulnerable to theft during the transportation phase than during any of the other phases of the licensed nuclear fuel cycle. Prior to the symposium, transportation protection had been strengthened by the issuance of 10 CFR Part 73, which required that large shipments of SNM be protected either by an escort or by the use of a common carrier who had an established system for the protection of valuable cargo in transit. For the protection of SNM at fixed sites, primary reliance continued to be placed upon materials accountability practices and upon the concept that fiscal responsibility would inherently cause licensees to provide an adequate level of physical protection.

B. 1970-1973

As of the beginning of 1970 there were no specific AEC criteria against which the adequacy of physical protection measures for protecting plants were judged. There was no specific requirement that guards be armed. However, over the preceding year power reactor applicants had been required to submit descriptions of industrial security measures.

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[7] WASH-1076, Proceedings of the AEC Symposium on Safeguards Research and Development, Argonne National Laboratory.

[8] WASH-1147, Proceedings of the AEC Symposium on Safeguards Research and Development, Los Alamos Scientific Laboratory of the University of California.

In the fall of 1970 a working group was established within the AEC which became known as the Ryan Committee (chaired by John Ryan of the General Manager's Office). Six subcommittees were formed, one of which pertained to physical protection. A final report was made in 1971 which had some degree of impact upon the eventual development of new regulations which became effective in 1973. Some deficiencies were found in existing security provisions. One result of the work of the Committee was that the responsibility for the determination of safeguards policies in the private sector were transferred from the General Manager to the Director of Regulation . Also, some intermediate licensing requirements evolved from the Ryan Report .

Joint Committee Inquiry

In a letter to AEC Chairman Glenn T. Seaborg on December 14, 1970, Chairman Chet Holifield of the Joint Committee on Atomic Energy wrote:

" The rash of incidents of suspicious origin resulting in personal injuries, death or serious property damage, which has been occurring over the past several years, and very recently impacted in Linden, New Jersey, prompts this inquiry to ascertain what the Commission's views are with respect to the adequacy of the physical security of licensed nuclear facilities.

"The Joint Committee, during public hearings in the past, and in meetings of its staff with Commission representatives, has been informed generally of the steps taken by the Commission through its Regulatory arm to assure that proper consideration is given by licensees to protection of nuclear facilities against sabotage. However, we wonder whether the increase in the frequency and magnitude of destructive acts have suggested the advisability of new Regulatory posture."

APPENDIX "o"

The reply to Congressman Holifield from Dr. Seaborg pointed out the work which had been performed by the McCullough group. It was stated that power reactor applicants were requested (there was no requirement by rule) by the Regulatory staff to submit security plans, and it was noted that a safety guide for security programs was currently under development.[9] However, it was said that aspects of the prospective guide were already being used as "interim guidance" for evaluating security measures. Other means in which security practices had been strengthened were explained. The reply closed by saying:

> "Actions carried out by professional subversive groups trained in sabotage and familiar with the facility have not been previously considered in our reviews. As a result of recent acts of sabotage at nonnuclear facilities, this policy is being reevaluated . . .".

Chairman Holifield's inquiry of December 14, 1970, was made soon after an October 27, 1970, threat to blow up Orlando, Florida, with a nuclear bomb unless a payment of one million dollars was made. The extortion demand, which included a 24 hour deadline and a description of a nuclear bomb, was directed to Orlando city officials. For several reasons, including the possibility the material emanated from some foreign source, the AEC could not forthwith assure the city government that the threat lacked credibility. Payment of the ransom was under consideration when the threat was determined to be a hoax by a 14 year old boy.

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[9] Safety Guide 17 was published October 27, 1971.

Kansas State Project

In October 1971 a symposium was held on the campus of Kansas State University. It was entitled "Symposium on Implementing Nuclear Safeguards" and attended by over 100 experts in the field. The preparatory work had begun in 1970 under the direction of Dr. Robert B. Leachman. The focus of the project was on societal aspects of nuclear materials control, but included the exploration of behavioral characteristics of potential thieves of nuclear material, criminological considerations and characteristics of the material and the industry in relation to other highly valuable or dangerous commerce.

The opening sentences of the preface to the book which compiled the symposium papers[10/] stated:

> "With appropriate levels of knowledge and technology, an explosive device of much greater destructive potential than from ordinary explosive materials can be constructed from only about ten kilograms of enriched uranium or plutonium. However, by 1980 many tens of thousands of kilograms of plutonium alone will be processed each year in the facilities preparing fuel for the nuclear-powered generating plants required to meet the world's demand for electricity."

[10/] Preventing Nuclear Theft: Guidelines for Industry and Government, edited by Robert B. Leachman and Philip Althoff, Praeger Publishers, 1972. This book contains a collection of papers on safeguards by noted authorities such as Leon Rappoport, J. D. Pettinelli, F. Morgan, J. Lovett and others.

Ralph F. Lumb Paper

By 1973 the AEC had made substantial progress in particularizing and enforcing security requirements. Ralph F. Lumb, then President of Nuclear Surveillance and Auditing Corporation, remarked[11/] upon a conclusion of the Kansas State project that there was a distinct polarization between the nuclear industry and AEC's regulatory arm. He said: "As the regulatory requirements have increased, there have been industry comments at many meetings to the effect that they are not really necessary: that industry is accustomed to protecting its assets. . .". But Lumb concluded that the argument of financial incentive was without merit because normal industrial practices had not always been employed in safeguarding nuclear material. Lumb noted:

> "Furthermore, industry appears to believe there is no illegal market for the materials and thus, no apparent incentive for theft of these materials."

Lumb, on the other hand, faulted AEC:

> "Without a coherent, comprehensive statement of program objectives and requirements from the AEC, industry is apprehensive concerning the ultimate burden of safeguards. Industry views the current situation as 'ad hoc safeguards' or 'rules and regulations by memo'. It feels that such an approach is subject to inequitable treatment within the industry."[12/]

[11/] Volume 1, No. 3, Journal of the Institute of Nuclear Materials Management, September, 1972.

[12/] In a press release of October 15, 1973 announcing the publication of new requirements to protect nuclear facilities and materials, the AEC said: "In the past, security plans for nuclear power plants and fuel reprocessing plants have been approved on a case-by-case basis, but AEC Regulations have contained no specific requirements for them."

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Lumb's position is borne out in part by the Commission staff's imposition of mucn more stringent licensing conditions on the first applicants to undertake fabrication of significant amounts of plutonium in reactor fuels, although the conditions were not included in either guides or published rules.[13]

Further Developments in 1973

Contributing further to a climate in which nuclear-utilities were more cognizant of the risks they faced and more receptive to ideas to improve protection were (1) a workshop on Protection of Special Nuclear Materials and Facilities sponsored by the Atomic Industrial Forum, Inc., in February 1973 and (2) the 1973 development by the American National Standards Institute, Inc., of the ANSI Standard N18.17, "Industrial Security for Nuclear Power Plants."

GAO Reports

During the latter part of 1973 and early 1974 the General Accounting Office examined the effectiveness of programs and procedures for safeguarding nuclear material in possession of AEC licensees and contractors and while in transit. In the November 1973 report[14] GAO noted several conditions at two licensee/contractor plants which "significantly limited the holders' capability for preventing, detecting, and effectively responding to a possible diversion or diversions attempt." GAO noted the AEC had undertaken an internal study of its physical protection program, that it was completed in 1971, and that AEC was slow in implementing recommendations for strengthening programs. The report said:

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[13] See March 15, 1972 letter from C.D.W. Thornton, Director of Division of Nuclear Materials Safeguards to Nuclear Materials and Equipment Corp and March 24, 192 letter from Thornton to Kerr-McGee Corp.

[14] "Improvements Needed in the Program for the Protection of Special Nuclear Material;" B-164105, Report to the Congress by the Comptroller General of the United States, November 7, 1973.

> "AEC needs to define in greater detail the expected capability of a protection system by providing more specifics relating to its prevention, detection, and response capability."

It should be pointed out that the Commission had decided to apply more stringent requirements before the November 1973 GAO report was issued. In fact, the deficiencies noted in the report were corrected by the new Part 73 requirements published for public comment in February 1973 and issued in effective form in November 1973.

In the April 1974 report pertaining to transit security, GAO again referred to these points, and added that they were applicable to the conditions observed relating to material in transit. GAO said: "During September and October 1973, we observed the protection afforded three large shipments of highly enriched uranium . . . and found that the material was susceptible to a diversion or a diversion attempt." ". . . although the shipments were made in accordance with AEC's reqqirments in effect at the time, the protection afforded the material was inadequate . . . ."

Even before issuance of the GAO report, AEC had decided to strengthen in-transit protection by placing more stringent requirements upon the firms which were causing the material to be shipped or received (rather than upon the carrier) instead of establishing a Government operated or Government controlled system. The Commission believed that adherence to the new regulations would provide sufficient protection for all shipments.

GAO concluded that while the AEC had been slow to improve in-transit protection, actions taken by the AEC since December, 1972 "represent important steps toward accomplishing the objective of the safeguard program." The AEC was urged to closely monitor shipments and strictly enforce new requirements, and then study the feasibility of a Government transportation system if the new requirements did not afford necessary protection.

APPENDIX "B"

C. The Situation in 1974

Willrich and Taylor

A report to the Energy Policy Project of the Ford Foundation, written by Mason Willrich and Theodore B. Taylor and printed at the beginning of 1974,[15/] stimulated apprehension in government and industry. Some authorities were dismayed that the authors had spoken so plainly about vulnerabilities, fearing that the work might serve as a textbook for persons with malevolent intentions -- or even inspire nuclear theft or blackmail. Others viewed the report as too negative or overly simplistic. Congress took keen interest in the findings and recommendations:[16/]

Willrich and Taylor explained that their study contained no classified information. They stated that the unclassified data that they had drawn upon was necessary to understand the risks and to form intelligent judgments and was available to the public at large. They said their purpose was ". . . to provide a means whereby the risk of nuclear theft and the cost of effective safeguards can be weighed, along with other risks and costs, against the very large benefits of nuclear power."

[15/] Nuclear Theft: Risks and Safeguards; by Mason Willrich and Theodore B. Taylor, Ballinger Publishing Company, 1974.

[16/] Dr. Taylor testified before the Joint Committee on Atomic Energy on January 28, 1974. He also testified on March 12, 1974 before the Ribicoff Subcommittee on Reorganization, Research and International Organizations (Senate Committee on Government Operations).

Willrich and Taylor concluded:

(1) Nuclear weapons are relatively easy to make, assuming the requisite nuclear materials are available.

(2) The use of nuclear energy to generate electric power will result in very large flows, in various nuclear fuel cycles, of materials that can be used to make nuclear weapons.

(3) Without effective safeguards to prevent nuclear theft the development of nuclear power will create substantial risks to the security and safety of the American people and people generally.

(4) The U. S. system of safeguards was incomplete at that time.

(5) A system of safeguards can be developed that will keep the risks of theft of nuclear weapon materials from the nuclear power industry at very low levels.

They recommended:

(1) The AEC should design a detailed system of safeguards for each of the nuclear fuel cycles based on use of the best available technology and institutional mechanisms.

(2) The AEC should consider the establishment of a federal nuclear materials security service with the sole responsibility of protecting nuclear materials subject to safeguards.

(3) The AEC should develop and publish a set of procedures for the review of physical security plans submitted by industry licensees.

(4) The U.S. Government should initiate discussions with the Governments of other nations with substantial nuclear power programs with a view to developing a common policy in favor of effective safeguards against nuclear theft anywhere in the world.

APPENDIX "B"

Senator Abraham Ribicoff chaired hearings held by the Senate Committee on Government Operations[17/] in February and March 1974, the purpose of which was to receive testimony concerning Senate Bills 2135 and 2744 which related to the establishment of a Department of Energy and Natural Resources, Energy Research and Development Administration and a Nuclear Regulatory Commission. As one aspect of the overall problem concerning the reorganization of the executive branch so as to facilitate the resolution of energy needs, the hearings looked at the question of safeguards. In citing five vital issues to be addressed relating to future energy needs, Senator Ribicoff asked:

> "Is the AEC adequately safeguarding materials and wastes being generated by the current nuclear power technology? Is there adequate planning for the proliferation of these dangerous substances - including the threat of terrorist acts and sabotage - that the breeder technology will bring?"

Dr. Theodore Taylor was one of many witnesses before the Ribicoff Subcommittee. He submitted a formal statement and expressed his concern about nuclear theft and sabotage. AEC officials who testified voiced some disagreement with Taylor's conclusion about the ease with which a crude nuclear weapon could be constructed with equipment readily available to the general public.

[17/] Subcommittee on Reorganization, Research and International Organizations hearings, February 26, 27 and March 12 and 13, 1974.

Rosenbaum Report

A safeguards study, now known as the Rosenbaum Report, was released in April 1974. It had been prepared at the request of the AEC by an independent group chaired by Dr. David M. Rosenbaum. In reviewing changes which have made safeguards such a vital issue, the report observed:

> "Terrorists groups have increased their professional skills, intelligence networks, finances, and levels of armaments throughout the world. International terrorist organizations, particularly those of the Arabs, probably have the ability to infiltrate highly trained teams of 10 to 15 men into this country without detection."

The Rosenbaum report considered that existing attitudes and efforts toward providing security for nuclear material had not matured to the same extent as attitudes and efforts toward safety measures. It expressed the belief that ". . . potential harm to the public from the explosion of an illicitly made nuclear weapon is greater than that from any plausible power plant accident. . ." A conclusion was reached in the report that the AEC must make a commitment to reduce security related risks to the public to the same level as operational risks.

The report also concluded that "Protection of the common defense and security against significant armed attack is not a responsibility which is reasonable or equitable to assign to private industry . . . (and therefore) we recommend the establishment of a federal nuclear protection and transportation service."

In a statement issued on April 26, 1974 commenting on the results of the Rosenbaum report, the Commission said it "is taking a hard look at the study to determine what additional measures would be taken to further strengthen the requirements to safeguard nuclear materials from theft."

APPENDIX "B"

Environmental Impact Statement

Light water reactors are not now contributing significantly to the safeguards problem. Virtually all of the fuel presently used in nuclear power reactors, or in reactors to become operable in the next several years, consists of low enriched uranium which cannot be made into a bomb without highly sophisticated technology. Although there is a companion hazard of possible environmental irradiation from sabotage of or diversion from these types of reactors, inherent characteristics of material and safety designed features are deemed to reduce the likelihood of such to a low probability. Certain production facilities and fuel fabrication plants, and material in transit, however, are recognized as more vulnerable and likely targets of attack. Stringent security measures have therefore been focused upon these plants and transit elements. Safeguards related problems associated with plutonium recycle were considered to be manageable, although it was recognized that such extensive use of mixed oxide fuel must be accompanied by decisions to implement stricter security measures for protection of the public.

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A determination was made by the AEC that any decision with respect to wide-scale recycle of plutonium in light water reactors would constitute a major Federal action significantly affecting the quality of the human environment. A draft environmental impact statement was therefore published in August, 1974, pursuant to federal statute.[18/] One of the principal issues considered is whether adequate levels of materials and plant protection can be achieved in a plutonium recycle economy. According to the draft impact statement, the objective of the safeguards program "will not be fully met for Pu recycle by current safeguards measures". The AEC staff stated in GESMO that it "has a high degree of confidence that through implementation of some combination of the (following) concepts the safeguards general objective (set forth earlier) can be met for Pu recycle". These concepts include:

(1) Integrated fuel cycle facilities which would minimize or eliminate critical aspects of transportation.

(2) Massive shipping containers, special escorts or convoys, vehicle hardening, improved transit communication and response capabilities.

(3) New site barrier requirements, surveillance instrumentation and delaying capabilities.

(4) Personnel security clearance procedures,[19/] a Federally operated nuclear security force, more advanced systems for monitoring and searching personnel and closer liaison with law enforcement authorities.

[18/] A Generic Environmental Impact Statement On the Use of Recycle Plutonium In Mixed Oxide Fuels In Light Water Reactors (GESMO); WASH-1327, USAEC

[19/] The AEC Omnibus Bill enacted August 17, 1974 authorizes the AEC to implement a clearance program for persons who have access to special nuclear material.

(5) Improving timeliness and sensitivity of system of internal control and accountability of plutonium.

(6) Altering the radiological properties of plutonium to make it less susceptible to theft or use in illicit weapon manufacture.

The AEC has continuing studies in progress to reassess safeguards measures in relation to changing social, economic and political conditions. In addition, research and development programs are being carried out to improve various elements of the safeguards system.

A report of the Natural Resources Defense Council[20/] challenges premises and findings of the GESMO, including safeguards aspects. The report is skeptical that safeguards for plutonium recycle can be elevated to an acceptable level, citing opposition in the nuclear industry, sheer difficulty in maintaining perpetual security over immense quantities of material and the deprivations of civil liberties and privacy which, it states, would probably be exacted. A September 26, 1974 letter to Chairman Dixy Lee Ray from Senators Mondale and Hart refers to the NRDC report and calls upon the AEC to "state with clarity and detail the safeguard measures it believes are necessary and to defer any action authorizing plutonium recycle until the public and the Congress have had an opportunity to publicly review the adequacy of the Commission's proposals and to take appropriate action".

A reply to the Senators gave assurance that all comments will be factored into the final environmental statement, and consideration will

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20/ The Plutonium Decision. A Report on the Risks of Plutonium Recycle, published in the November 1974 Bulletin of the Atomic Scientists.

be given to scheduling a public hearing. A Special Studies Group has been established within the Commission, one function of which will be to make an analysis of safeguards measures for any licensed future use of plutonium for fuel of light water reactors.

GAO Study - Security Agency Assessment

The General Accounting Office conducted a follow-on survey to the reviews already mentioned by visiting nine nuclear power plants during 1974. The GAO letter report to AEC of October 16, 1974, pointed out:

> "Licensee and AEC officials agreed that a security system at a licensed nuclear powerplant could not prevent a takeover for sabotage by a small number - as few, perhaps, as two or three - of armed individuals."

GAO concluded with:

> "AEC needs to (1) give licensees more specific guidance on the level of threats their security systems must be prepared to handle by clarifying the differences between assaults by small groups of discordant individuals and by paramilitary groups, (2) clarify the Government's responsibility for protecting nuclear powerplants against sabotage by paramilitary groups, and (3) establish performance criteria for licensees' total security systems."

With respect to these findings AEC indicated to GAO in a letter dated October 31, 1974 that new regulations effective in December 1973 required licensees to submit physical security plans describing measures to be used for the protection of nuclear reactors against sabotage. AEC also brought to the attention of GAO the serious and complex legal and social problems involved in such concerns, and that Congress had taken cognizance of the problems by including a section in the Energy Reorganization Act of 1974[21/] which

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[21/] Section 204(b)(1)(C), Public Law 93-438, October 11, 1974 requires the Nuclear Regulatory Commission to make an assessment of the need for, and feasibility of, a federal security agency.

During the next year, the reply continued, the assessment will be made so as to permit a reasoned determination of the division of responsibility between licensee and governmental authority. It was felt that new directives before completion of the project would be premature and inconsistent with the sense of Congress.

This assessment to be made for a security agency will have wide-ranging impact on the future posture and effectiveness of physical security for power plants, transportation, production facilities and fabrication plants.

Indian Point Intervention

The question of the obligation of a license applicant to submit a security plan which will provide for forces strong enough to cope with an armed attack by other than an "enemy of the United States"[22] was raised by intervenors in connection with the application of Consolidated Edison Company of New York, Inc. (Indian Point Station Unit No. 2). The Licensing Board decided[23] that the AEC regulations do not require provision for protection "against an armed band of trained saboteurs intent on seriously damaging the plant and with sufficient knowledge to carry out that mission in a short time".

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[22] 10 CFR 50.13 stipulates that a license applicant is not required to provide measures to protect against attacks "by an enemy of the United States".

[23] July 14, 1972; LBP-72-16 reported at TID-26300 43.

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Exceptions taken by intervenors were ruled upon by the Atomic Safety and Licensing Appeal Board in a Supplemental Decision on April 25, 1974. The Appeal Board concurred in the judgement of the Licensing Board, saying that the "rationale of the Commission's approach (in 10 CFR 50.13) in not requiring an applicant to protect against the effects of enemy attacks and destructive acts would also apply to an armed band of trained saboteurs . . . it seems that an applicant should be entitled to rely on settled and traditional governmental assistance in handling an attack . . . without such reliance, each facility could indeed become an armed camp." The Appeal Board thought it would be unreasonable to expect the utility to first ponder whether an attacking force is an enemy of the United States before deciding whether to respond or seek assistance. It felt the problem of an armed group of domestic saboteurs differed insubstantially from that of saboteurs of foreign origin.

The following views of the Board are especially relevant to the GAO recommendations and to the Congressional requirement for a security agency study:

> "If an applicant's security plan must be able to deal with such attacks (armed domestic saboteurs), it would have to anticipate, with some accuracy, the size of the force, weapons, and tactics which would be encountered and design defenses against them. In other words the plan would probably have to provide for waging at least a limited scale war with a group which is not an enemy of the United States."

The persistent questions which evolve from the judgement in this case is whether AEC regulations should nevertheless require the licensee to provide for defending against an armed band of saboteurs or thieves (whether domestic or foreign), whether such a requirement would be socially desirable or practically necessary, and whether fundamental changes are in order concerning the nature and capability of response forces.[24/]

Carl Walske Statement

Some insight into the most recent thinking of the nuclear industry may be gained from the remarks of Carl Walske, President of the Atomic Industrial Forum, Inc.[25/] at a Public Affairs Workshop on October 9, 1974. Walske endorsed new AEC regulations. He advocated even more improvements in security measures. He proposed such developments as a federally operated communications network, a federal command center for receipt of theft and sabotage reports and the use of governmental forces to protect nuclear material in transit as well as for situations at fixed sites which will require the use of firearms.

[24/] Part 73 amendments recently published for public comment would require reactor licensees, among other things, to train and equip a force of on-site guards to protect the plant against an attacking force.

[25/] The Forum has 625 member firms involved in commercial applications of nuclear energy. Although the membership had not been polled on safeguards questions, Walske noted the AIF staff had a number of discussions with a good sampling of member representatives.

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[illegible], CONN.
LEE METCALF, MONT.
JAMES B. ALLEN, ALA.
LAWTON CHILES, FLA.
SAM NUNN, GA.
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APPENDIX "C"

United States Senate
COMMITTEE ON
GOVERNMENT OPERATIONS
SUBCOMMITTEE ON REORGANIZATION, RESEARCH, AND
INTERNATIONAL ORGANIZATIONS
(202) [illegible]
([illegible])
WASHINGTON, D.C. 20510

August 12, 1974

HARTFORD INS. GROUP
RECEIVED
AUG [illegible]
LAW DEPARTMENT

Mr. Richard A. Schmalz
Assistant General Counsel
Hartford Insurance Group
Hartford Plaza
Hartford, Connecticut 06115

Dear Mr. Schmalz:

As you know, the Senate on August 8 adopted my amendment to include the consequences of nuclear theft under the indemnity provisions of the Price-Anderson Act. During the debate, I told Senator Pastore that I would forward to the Joint Committee on Atomic Energy, in time for the House-Senate conference on the bill, the views of the two pools of nuclear insurers on my amendment.

I would appreciate, therefore, if the Nuclear Energy Liability Insurance Association would consider this amendment specifically with respect to the following questions:

1. Is the amendment acceptable to nuclear insurers with the understanding that it does not compel the insurance industry to write any nuclear policy that it would not otherwise write?

2. Under the strict liability terms of Price-Anderson, as amended by my amendment, would the pools of nuclear insurers be prepared to write polcies covering nuclear thefts as well as accidents?

I am advised by the Joint Committee, that the conference on Price-Anderson will be held in about two weeks. Inasmuch as Senator Pastore has assured me that the Joint Committee will await the views of the nuclear insurers, your prompt attention to this request would be appreciated.

Mr. Richard A. Schmalz
August 12, 1974
Page Two

I have sent an identical letter to Mr. Bert H. Thompson of the Mutual Atomic Energy Liability Underwriters, which I understand works closely with your group on these matters.

Please contact Paul Leventhal of my Subcommittee staff if you have any inquiries about the amendment, or need any information on nuclear safeguards in addition to what he already has sent you.

Thank you for your interest and cooperation.

Sincerely,

Abe Ribicoff

Abe Ribicoff

Hartford Fire Insurance Company
Hartford Accident and Indemnity Company
Hartford Life Insurance Company

Citizens Insurance Company of New Jersey
New York Underwriters Insurance Company
Twin City Fire Insurance Company

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THE HARTFORD INSURANCE GROUP
HARTFORD PLAZA, HARTFORD, CONNECTICUT 06115

RICHARD A. SCHMALZ
ASSOCIATE GENERAL COUNSEL

August 14, 1974

Honorable Abraham Ribicoff
United States Senate
Senate Office Building
Room 321
Washington, D. C.

Re: Ribicoff Amendment - Price Anderson Extension

Dear Senator Ribicoff:

Without having had the opportunity to bring the questions raised in your letter formally before the Governing Committee of the Nuclear Energy Liability Insurance Association (NELIA), I believe on the basis of conversations with a number of its members that the following would be representative of the attitude of NELIA's membership.

Insurers would generally support the idea that the public should be protected against the financial consequences of extraordinary nuclear occurrences arising out of the theft of nuclear material.

The amendment does raise, however, a serious public policy question. Should private indust be held liable without fault for thefts which might require the marshalling of substantial private protective forces that might, even then, not be sufficient to guarantee safe passage? Insurers would be inclined to feel that the Government should be prepared to assume the major responsibility for affording the public protection against thefts, includi indemnification from any resulting injury or damage.

Answering your questions more specifically, we believe that our members would consider the amendment acceptable with the understanding that it does not compel the insurance industry to write exposures it would not otherwise write and that the substance of your remarks in the Congressional Record of August 8 would apply; that is: "The AEC should not read this amendment to require the insurance industry to write policies covering both risks, or no policies at all."

Our members would give very careful consideration to the possibility of covering the strict liability which would be imposed by this amendment, but we cannot state positively that insurance would be available. Insurers would have to be satisfied as to the special precautions taken with respect to shipments of nuclear materials and might then find it necessary to attach special limitations on the amount of their liability and special condition: for the coverage.

In the absence of full availability of private insurance, we would favor an approach which would provide for government indemnification of private industry upon compliance with reasonable safeguard regulations.

I understand Mutual Atomic Energy Liability Underwriters will respond separately to your questions.

Very truly yours,

Richard A. Schmalz

YEAR IN AND YEAR OUT YOU'LL DO WELL WITH THE HARTFORD

[illegible]

AMIA

AMERICAN MUTUAL INSURANCE ALLIANCE
~~[illegible]~~
1776 F Street, N.W., Suite 504, Washington, D.C. 20006
(202) 331-0313

August 14, 1974

Joint Committee on Atomic Energy

Gentlemen:

Re: H. R. 15323

The Alliance is the voluntary association representing the mutual insurance companies in the property and casualty insurance business. In this instance, we write on behalf of our members who are organized as "Mutual Atomic Energy Liability Underwriters".

We are opposed to the amendment of Senator Ribicoff which was adopted when this bill was passed by the Senate on August 8. Although we appreciate the Senator's very proper concern with the problems arising from the theft of nuclear materials which he has graphically described, we believe the subject as embodied in his amendment is extremely complex and will require detailed consideration by the insurance industry before it can consider insuring against the hazard involved. For example, study must be given to the magnitude of the risk, the potential losses involved, the security requirements to be borne by insured, insurers or the government, the legislative and insurance policy language to be employed and the precise extent of the insurance coverage desired.

Consequently, we hope Senator Ribicoff's amendment will be dropped in conference, and that the committee will consider this subject after the issues have been fully developed.

Very truly yours,

Burt K. Thompson
General Attorney-Federal Affairs

BKT:sf

[illegible]

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UNITED STATES
ATOMIC ENERGY COMMISSION
WASHINGTON D.C. 20545

OCT 9 1974

Mr. Joseph Marrone
General Counsel
Nuclear Energy Liability Insurance
Association
The Exchange, Loft A, Bldg. 3, Suite 323
Farmington Avenue
Farmington, Connecticut 06032

Dear Mr. Marrone:

We appreciated the opportunity to meet with you on September 26, 1974 to discuss the question of extending Price-Anderson indemnity to incidents arising out of diversion of nuclear material. As we indicated at the meeting, we are submitting the following questions to you relating to this general subject area. We understand from our discussion that at this time the Pools may be able to offer only preliminary views pending their further consideration of the entire problem. Nevertheless, in view of the necessity of reporting the results of our examination of this question to the Joint Committee early next year and the desirability of reflecting the views of the insurance industry, we would appreciate receiving your most considered views at this time, and as appropriate, some indication of the considerations and timing that might be involved in any updating of these views.

1. Do you feel that it would be in the public interest to extend Price-Anderson coverage to incidents arising out of diversion of nuclear materials? What considerations bear on the relative roles that government and private industry should play in extending this coverage? How would the Pools anticipate participating in whatever coverage is made available through private industry?

2. What is your interpretation of the present nuclear liability insurance coverage relating to incidents arising out of the diversion of nuclear material:

   a. At the indemnified site?

   b. In the course of transportation (whether the transportation is illicit or not)?

   c. After transportation has ended?

   What are the pertinent sections of the Facility Form?

Mr. Joseph Marrone -2- OCT 9 1974

3. If coverage were to be extended to incidents relating to diversion, what licensees and activities should be included in this coverage?

4. Under what conditions would the Pools be prepared to extend nuclear liability insurance for risks related to diversion? Considering the various types of activities that would or should be covered and the Pools' capacity, what do you feel would be reasonable coverages and exclusions? How do the suggested coverages and exclusions impact on the premiums you would charge?

5. Should coverage under Price-Anderson be extended to cover losses in addition to personal injury and property damage arising out of or resulting from nuclear incidents (e.g. payments made to extortionists who threaten to use diverted material unless a ransom is payed)?

6. If coverage were to include incidents arising out of identifiable diversion of licensed nuclear material, should it be broadened in such a manner to provide coverage for incidents arising out of diverted material where the specific source of the material diverted (i.e. the particular licensee) cannot be ascertained?

If there is any additional information that we may provide please do not hesitate to contact us. We hope that you will be able to provide us with answers to the above questions as well as any other comments you may have on this subject within a month. We are making this letter available to the mutual pool so that the pools might send separate replies or a combined response.

Sincerely,

Signed, Jerome D Saltzman

Jerome Saltzman, Deputy Chief
Office of Antitrust & Indemnity
Directorate of Licensing

nelpia
NUCLEAR ENERGY LIABILITY | PROPERTY INSURANCE ASSOCIATION

BURT C. PROOM, CPCU
General Manager

RECEIVED
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December 16, 1974

Mr. Jerome Saltzman, Deputy Chief
Office of Antitrust and Indemnity
Directorate of Licensing
United States Atomic Energy Commission
Washington, DC 20545

Dear Mr. Saltzman:

We have prepared the attached memorandum in response to your letter of October 9, 1974 asking for NELIA's views on a number of questions relating to the extension of Price-Anderson indemnity to incidents arising out of the illegal diversion of nuclear material.

The more deeply we go into this matter the more perplexing the policy implications and technical problems seem to become. The potential impact on the nuclear industry and the public is likely to be far greater than on the insurance industry. We believe it is important to obtain the widest possible expression of views and suggestions for possible solutions. A brief summary of the conclusions reached in our memorandum follows.

We do not believe there is any justification for imposing absolute liability on the nuclear industry for the purpose of upgrading safeguards. We doubt that the possibility of nuclear harm to the public can be significantly reduced by this indirect technique. Appropriate safeguards against the theft of nuclear material should be established by the more direct method of analyzing the hazards at each step in the production and utilization process and developing specific responses.

The use of Price-Anderson as a compensation scheme for the victims of nuclear crime is open to serious objections, certainly without substantial modifications. It may be argued that even a small, less than ideal step is worth taking towards a general solution to the problem of compensating those injured by criminal activities of any nature. But if it is to be taken, it should be recognized as imposing a unique burden on private industry. This calls for caution and great care in establishing the measure and extent of compensation and the relative roles of private industry and the government.

We feel the government should bear, if not all, then by far the greater share of financial responsibility, because keeping the peace has historically been the function of government. The Rosenbaum Report has estimated the maximum credible threat to the safeguarding of nuclear materials as 15 highly trained men. It seems wholly inappropriate to expect private industry to marshal para-military forces capable of frustrating the efforts of such a group.

While there are a number of ways for making a possible Pool participation available if coverage is desired, we believe that a separate, special program for the illegal diversion hazard ought to be set up within Price-Anderson. Perhaps a good way for the Pools to participate in such a program would be through a single group policy issued to the nuclear industry covering the illegal diversion hazard only.

Coverage under present nuclear liability insurance policies for the illegal diversion of nuclear material is limited to but a few of the more insignificant fact situations which can be imagined. On historical grounds whatever coverage exists for diversion and misuse of nuclear material for destruction purposes exists by accident and not design. If a special program for covering the illegal diversion hazard is established, the present limited coverage for the hazard should be removed from existing nuclear liability policies and be replaced by the special program.

If Price-Anderson were to be extended to incidents relating to illegal diversion, we believe that all licensee and contractor activities should be included which involve keeping or transporting of significant quantities of plutonium or enriched uranium.

We believe it would be premature for us to suggest at this time a specific liability insurance program for risks related to diversion. Should a consensus develop that Price-Anderson ought to be extended to cover this hazard, our members would quite likely be willing to participate at least to the extent of getting an immediate emergency payments program underway. We do not expect, however, that more than a rather small fraction of the full amount of coverage presently afforded as financial protection would be available for this hazard.

We do not believe that coverage under Price-Anderson should be extended to cover payments to extortionists. Such a policy would seem likely to encourage extortion attempts. The question whether to pay ransom or not should be resolved on an ad hoc basis by the government at government expense.

Our view is that the only justification for extending Price-Anderson to cover the illegal diversion hazard is to provide swift, sure and reasonable compensation for the victims of nuclear crimes. Keeping this in mind, we regard it desirable, if possible, to include coverage for incidents where there is a reasonable certainty that licensed nuclear material was involved even though the particular licensee cannot be identified.

The imposition of absolute liability upon the nuclear industry should be looked upon solely as a device to trigger a unique compensation system. The statutory liability of private industry under any special program should be exclusive of all other liability. It should be limited to a reasonable amount, not to exceed in any case the sum of any private insurance and government indemnity available. Consideration should be given to restricting the compensation to individual injured persons to actual economic loss.

In our discussions we have only been able to identify some of the major issues and reach the most tentative conclusions. We hesitate to offer them to you and do so only because we understand the time pressures on your own examination.

Should there be a decision to go forward with the extension of Price-Anderson coverage to incidents arising out of the diversion of nuclear material with the development of a specific program, we will of course be willing to consider further the question of participation by the insurance industry.

Very truly yours,

J Marrone

Joseph Marrone
General Counsel

JM:pan
Enclosure

MEMORANDUM OF NELIA

ON

QUESTIONS RELATING TO THE EXTENSION OF PRICE-ANDERSON INDEMNITY TO INCIDENTS ARISING OUT OF THE ILLEGAL DIVERSION OF NUCLEAR MATERIAL

I

Do you feel it would be in the public interest to extend Price-Anderson coverage to incidents arising out of diversion of nuclear material?

We believe it is fair to say that the proposal has two major goals: (1) to bring about a significant reduction in the possibility of serious harm to the public from the theft of nuclear materials and (2) to improve the financial protection of the public if nevertheless a serious incident should occur.

We strongly support these objectives, but we have serious reservations about the methods chosen to reach them. We will consider the two objectives separately.

Reducing the Possibility of Harm

The first goal assumes that an upgraded safeguards program for the Commission's licensees can significantly reduce the possibility of serious harm to the public from criminal or terrorist activities on a grand scale.

We cannot condone a relaxed, callous attitude towards safeguarding nuclear materials. But we cannot overlook the fact that criminal or terrorist bands have at their disposal ample resources, other than nuclear, for causing immense public harm. Or that tightening nuclear safeguards within the United States will not stop them from bringing in nuclear material from foreign sources. This suggests that the problem must be tackled on a broad front with the most efficient utilization of resources possible.

To reduce the possibility of serious harm to the public the proposal relies principally on a rather complex indirect method. By imposing absolute liability on the nuclear industry for the consequences of theft, it is hopeful that the industry would be forced to upgrade safeguards to the level at which insurers would be willing to insure or risk heavy financial loss.

We doubt that this indirect technique would prove to be successful. Two basic assumptions on which it rests are suspect. The first is that the threat of liability acts as a deterrent to careless behavior or as a stimulus to extraordinary care. Many would doubt the truth of this proposition. Whatever validity it may have would seem to vanish if the threat of loss were transferred to insurers or diffused by industry-wide assessments.

The second assumption implicit in the proposal is that the standards private insurers would accept for safeguarding nuclear material are the appropriate standards for protecting the public. Insurers would be the first to acknowledge that they have no special expertise that would warrant reliance on their judgment for such a purpose.

In short, we do not feel there is any justification for imposing absolute liability upon the nuclear industry for the purpose of upgrading safeguards. We believe that the question of appropriate safeguards against the theft of nuclear material should be resolved by the more direct method of analyzing the hazards at each step in the production and utilization process and developing specific responses.

Financial Protection for the Public

The second goal of the proposal is to improve the financial protection for the public if a serious incident should occur despite upgraded safeguards.

Let us assume the situation where the nuclear industry has taken every reasonable precaution and it has not been enough. Neither the industry nor the government has been able to prevent serious harm to the public from criminal or terrorist activities. Who should bear the loss: the industry or the government?

If we absolve the industry because it has done all it reasonably can, the public suffers unless the government steps in. Should the government step in for criminally caused nuclear losses but not for other criminally caused losses perhaps equally or more serious?

If the government steps in, should the measure of compensation be the traditional tort measure of damages now provided by Price-Anderson which allows recovery of both intangible and economic loss? We believe consideration should be given to limiting compensation to economic loss; that is, elements of loss which can be quantified in dollars, such as medical expenses, wage loss, funeral expenses, costs of replacement services, future lost earnings and property damage.

If industry were to be held liable on some theory of enterprise responsibility for harm it could not reasonably prevent, again we think consideration should be given to limiting recovery to something less than full tort damages.

These considerations lead us to believe that the use of Price-Anderson as a compensation scheme for the victims of nuclear crime is open to serious objections, certainly without substantial modifications.

Some may argue that even a small, less than ideal step is worth taking towards a general solution to the problem of compensating the victims of crime. But if it is to be taken, it should be recognized as imposing a unique burden on private industry. This calls for caution and great care in establishing the measure and extent of compensation and the relative roles of private industry and the government.

II

What considerations bear on the relative roles that government and private industries should play in extending this coverage?

The Rosenbaum Report has estimated the maximum credible threat to any facility or element of transportation handling special nuclear materials as 15 highly trained men. We look askance at the implications inherent in expecting private industry to hire, equip, train and deploy para-military forces capable of frustrating the efforts of such a group. Keeping the peace has historically been the function of government. We believe it should continue to be so. For this reason alone we feel that government should bear, if not all, then by far the larger share of financial responsibility.

Other important considerations point to the same conclusion. The greatest danger is from political groups which will require political responses and solutions. It will be virtually impossible to determine by hard evidence whether licensee, government contractor or foreign nuclear material is involved. The effect of absolute liability on achieving appropriate safeguards will be minimal, at most.

III

How would the Pools anticipate participating in whatever coverage is made available through private industry?

There are a number of ways for making a possible Pool participation available. The coverage could be added to existing policies by endorsement. Separate policies could be issued to each licensee for the illegal diversion hazard only. Or the Pools could issue a single group policy to the nuclear industry covering the illegal diversion hazard only. Several factors should be considered in making a choice.

While some insurance coverage will probably be available, it is not likely to approach more than a very small fraction of the present $110 million. If all licensees handling or transporting significant quantities of plutonium or enriched uranium are included, present financial protection requirements will have to be extended to facilities not now covered. Both the limited capacity and extension of financial protection can probably be dealt with better by establishing a separate financial protection requirement for the illegal diversion hazard.

To make a compensation system reasonably comprehensive, the burden of proving the indentity of the nuclear material may have to be relaxed to the extent that positive identification of a particular licensee's material will not be required. We will not be able to assign a loss to any particular policy, except in a purely arbitrary way.

The possibility of multiple nuclear incidents occurring in connection with ordinary operational activities is far more remote than that of a single incident. Given the ruthlessness of those willing to destroy lives and property for blackmail or political purposes, multiple incidents arising out of illegal diversion of nuclear material become more probable if one is successful. We believe that there would have to be an aggregate limit on any participation by private industry. We would favor placing such a limit on participation by the government as well.

These considerations, as well as several others touched upon in this memorandum, cause us to believe that a separate, special program ought to be set up within Price-Anderson if coverage is desired for the illegal diversion hazard. We think this program should have lower limits of financial protection, its own rating base for private insurance, perhaps internal restrictions on the kind and amount of compensation to individual victims and its own separate ceiling on the combined private industry and government participation.

Nuclear liability insurance coverage interpretations relating to incidents arising out of the diversion of nuclear material.

Background

The coverage concepts and policy wording of the nuclear liability insurance policies used by the Pools were developed in the late 1950's, contemporaneously with the original Price-Anderson legislation. Few would have imagined that we would soon witness wide-spread highjackings of giant airliners and terrorist activities capable of blackmailing major governments.

The making of an atomic bomb was generally considered at that time to be an impossible task for all but a tiny handful of nations. That small underground groups might succeed by stealing scraps of nuclear material was beyond belief.

On historical grounds it is apparent that whatever coverage exists under a Facility Form policy for the illegal diversion and misuse of nuclear material for destructive purposes is there by accident and not design.

The Facility Form policy was intended to apply primarily to operations at the site, and to a limited extent, to transportation of nuclear material to and from the site. Thus coverage is provided only with respect to nuclear materials (1) at the Facility, (2) discharged or dispersed from the Facility, or (3) in an "insured shipment" which is in the course of transportation within the territorial limits of the policy.

Pertinent Provisions of the Facility Form

The basic obligation of insurers under the Nuclear Energy Liability Insurance Policy (Facility Form) is stated under Coverage A:

> "To pay on behalf of the insured . . . all sums which the insured shall become legally obligated to pay as damages because of bodily injury or property damage caused by the nuclear energy hazard . . ."

The nuclear energy hazard is defined in the policy as:

> ". . . the radioactive, toxic, explosive, or other hazardous properties of nuclear material, but only if
> (1) the nuclear material is at the facility or has been discharged or dispersed therefrom without intent to relinquish possession or custody thereof to any person or organization, or
> (2) the nuclear material is in an insured shipment which is (a) in the course of transportation, including handling and temporary storage incidental thereto,

> within the territorial limits of the United States of America, its territories or possessions, Puerto Rico or the Canal Zone and (b) away from any other nuclear facility."

An insured shipment is defined as:

> ". . . a shipment of source material, special nuclear material, spent fuel or waste, herein called 'material,' (1) to the facility from any location except an indemnified nuclear facility, but only if the transportation of the material is not by predetermination to be interrupted by removal of the material from a transporting conveyance for any purpose other than the continuation of its transportation, or (2) from the facility to any other location, but only until the material is removed from a transporting conveyance for any purpose other than the continuation of its transportation."

Coverage Interpretations

Numerous fact situations can be imagined which would bring into play additional provisions of the Facility Form. To simplify discussion and focus sharply on what we believe are the issues, we will assume several specific situations.

In all cases we assume bodily injury or property damage off-site caused by the hazardous properties of nuclear material and that the injury or damage is not due to war, etc. within the meaning of exclusion (e).

> In Case A we assume that a criminal band attempts to take possession of "nuclear material" at the site of an indemnified facility. During the course of its efforts, the material is discharged or dispersed from the site.
>
> In Case B we assume that a criminal band attempts to take possession of nuclear material while in an "insured shipment" covered by the policy. During the course of the band's efforts, the material is released or escapes from its container.
>
> In Case C we assume that the criminal band succeeds in taking possession of nuclear material at an indemnified site, and the material is released or escapes in the course of the band's transportation of the material from the site to another location.

> In Case D we assume that the criminal band succeeds in taking possession of nuclear material either at an indemnified site or from an "insured shipment" covered by the policy and subsequently releases or explodes the material in a separate action.

We believe that the legal obligation of an insured to pay damages because of the bodily injury or property damage resulting in Cases A and B would be covered by the Facility Form. However, we do not think that the facility operator would be liable under existing negligence or strict liability principles because of the gross and essentially uncontrollable nature of the intervening cause of loss. We think it may be argued that members of the criminal band would qualify as insureds under the policy with respect to their legal liability for the injury or damage. Although the objective of Price-Anderson is to compensate the public for nuclear injury arising out of the peaceful use of atomic energy, there is a public policy question involved in extending liability coverage to criminal bands.

We would regard the injury or damage in Case C as totally outside the coverage provided by the Facility Form. We would not consider nuclear material wrongfully removed from the site as having been "discharged or dispersed" from the facility as those words are used in the definition of "nuclear energy hazard." We would not regard the transportation by the criminal band as an "insured shipment."

We would also regard the injury or damage in Case D as totally outside the scope of Facility Form coverage. At the time the nuclear material caused the loss it was not at the facility or in an insured shipment. Nor, as indicated above, would we regard it having been discharged or dispersed from the facility.

V

If coverage were to be extended to incidents relating to diversion, what licensees and activities should be included in this coverage?

If Price-Anderson were to be extended to incidents of this kind, we believe that all licensee and contractor activities should be included which involve the keeping or transporting of significant quantities of plutonium or enriched uranium.

VI

Under what conditions would the Pools be prepared to extend nuclear liability insurance for risks related to diversion? Considering the various types of activities that would or should be covered and the Pools' capacity, what do you feel would be reasonable coverages and exclusions? How do the suggested coverages and exclusions impact on the premiums you would charge?

We think it would be premature for us to suggest at this time a specific liability insurance program for risks related to diversion. The earlier portions of our memorandum express our concern about the public policy questions involved and stress the need for the widest possible expression of views.

Should a consensus develop within the government and the nuclear industry that Price-Anderson should be extended, our members would quite likely be willing to participate at least to the extent of getting an immediate emergency payments program underway. We do not expect, however, that more than a very small fraction of the full amount of coverage presently afforded as financial protection would be available for this hazard.

An important consideration bearing on the extent of our participation would be whether a generally acceptable rating plan could be developed.

We cannot address ourselves to the question regarding the premiums we would charge as they depend so directly on the type of compensation plan developed.

VII

Should coverage under Price-Anderson be extended to cover losses in addition to personal injury or property damage arising out of or resulting from nuclear incidents (e.g. payments made to extortionists who threaten to use diverted material unless a ransom in paid)?

We believe that coverage under Price-Anderson should not be extended to cover payments to extortionists. Such a policy would seem likely to encourage extortion attempts. In any case, we believe that the question of whether to pay ransom should be resolved on an ad hoc basis by the government at government expense.

VIII

If coverage were to include incidents arising out of the identifiable diversion of licensed nuclear material, should it be broadened in such a manner to provide coverage for incidents arising out of diverted material where the specific source of the material diverted (i.e. the particular licensee) cannot be ascertained?

Our view is that the only justification for extending Price-Anderson is to provide swift, sure and reasonable compensation for the victims of crime. Keeping this in mind, we regard it desirable, if possible, to include coverage for incidents where there is a reasonable certainty that licensed nuclear material was involved even though the particular licensee cannot be identified.

We think that it will be difficult to make such a determination on the basis of hard evidence. Quite likely a special mechanism not bound by ordinary rules of evidence and burdens of proof will be required if the objective is to be met.

Summary and Concluding Comments

We believe there is no justification for imposing absolute liability on the nuclear industry for the purpose of upgrading safeguards.

Whatever coverage presently exists under nuclear liability insurance policies for the illegal diversion of nuclear materials exists by accident and is limited to only a few of the factual situations which may be imagined.

The expansion of Price-Anderson into a compensation scheme for the victims of nuclear crime is open to serious objections, certainly without substantial modifications. If it is to be used for such a purpose, a special program should be set up within the Price-Anderson framework. The limited present coverage of nuclear liability policies should be replaced by the special program.

The imposition of absolute liability upon the nuclear industry should be looked upon solely as a device to trigger a unique compensation system. The government, which must necessarily bear the primary responsibility for keeping the peace, should bear, if not the whole, then by far the greater share of the cost.

The statutory liability of private industry under the special program should be exclusive of all other liability and should be limited to a reasonable amount, not to exceed in any case the sum of any private insurance and government indemnity available. Consideration should be given to limiting the amount of compensation to individual injured persons to their economic loss.

* * *

MUTUAL ATOMIC ENERGY LIABILITY UNDERWRITERS

One East Wacker Drive *Chicago, Illinois 60601*
Telephone 467-4090

January 14, 1975

Mr. Jerome Saltzman, Deputy Chief
Office of Antitrust and Indemnity
Directorate of Licensing
United States Atomic Energy Commission
Washington, D.C. 20545

Dear Mr. Saltzman:

The Governing Committee of the Mutual Atomic Energy Liability Underwriters (MAELU) has reviewed the questions posed by your letter of October 9, 1974. We are also aware of Mr. Marrone's letter and enclosures of December 16, 1974, setting forth NEL-PIA's response to your questions.

We are in substantial agreement with the views expressed by NEL-PIA. Hence, this separate reply by us should not be regarded necessarily as distinguishing the MAELU position from that of NEL-PIA--but mainly as an effort to stress the points that we feel are most deserving of emphasis.

As a general proposition, we do not dispute the social desirability of compensating hapless victims for losses sustained from the depredations of criminals. However, it seems to us that the best approach to such compensation is through such private first party insurance as is available, supplemented by Social Security, Medicare, etc.; and, to fill the gaps, "crime victim" indemnification from the general revenues of government.

The Ribicoff amendment would propose to transfer the cost of such compensation to the private sector, that is to the nuclear industry, their customers and their insurers. If private insurers are to be expected to consider underwriting this kind of hazard on

[illegible]

Governing Committee

American Mutual Liability Insurance Company
Employers Mutual Liability Insurance Company of Wisconsin
Sentry Insurance A Mutual Company

Liberty Mutual Insurance Company
Lumbermens Mutual Casualty Company
Michigan Mutual Liability Company

a third party basis, we feel that MAELU's members would only be content to give limited consideration to those situations in which:

(1) the source of the unlawfully diverted nuclear material can be traced conclusively to a particular facility or policyholder; and

(2) some element of fault exists as respects such policyholder.

We would deem it inappropriate, for example, to charge the private insurance experience of the domestic nuclear industry with a loss occurring in the United States, if the source of the diverted nuclear material causing such loss was unknown and conceivably could have been of foreign origin.

Likewise, even if the source of diverted nuclear material could be established as having been one of our policyholders, we still don't believe the policyholder and its private insurer should be charged with losses due to a diversion that occurs despite the fact that the policyholder has exercised the highest degree of care possible to prevent such diversion.

The Ribicoff amendment would seek to charge the nuclear industry and its customers with losses when the magnitude and determined nature of the criminal act is so great as only to be susceptible to prevention, if at all, through exercise of state or federal police power.

Many other useful instrumentalities in our society are capable of causing great harm for no other reason than that they have come into the hands of careless or malevolent persons. However, absent the two criteria enumerated above, it has not been our society's practice to charge such losses (1) to an industry generally; or, (2) to the specific but blameless owner of such instrumentality.

Regardless of the wisdom of singling out the nuclear industry for the imposition of such an unusual liability, it is our position that, absent the two aforementioned criteria at least, the Ribicoff amendment goes beyond the area of potentially insurable hazard.

Be that as it may, as and when specific legislative proposals in this area are developed, be assured that mutual insurers are willing to continue a dialogue aimed at determining the appropriate role for private insurance to play.

Respectfully yours,

Roy J. Hammond
Manager

RJH/ko'b

QUESTION 10.

Issue	Position
Limit on Liability	
A) NRC licensees	A majority of Commissioners--including Commissioner Roberts, Bernthal, and Zech believe that, of the proposals now before the Congress, S.1225 offers the best approach. S.1225 would continue the Price-Anderson system of limited liability for NRC's large power reactor licensees subject only to the possibility of Congressional modification in the unlikely even that S.1225's three-layer approach failed to provide compensation to injured persons. It should be noted that Commissioner Bernthal believes that a higher liability ceiling for reactor

	LICENSEES THAN THAT PROPOSED IN S.1225 MAY BE DESIRABLE. CHAIRMAN PALLADINO AND COMMISSIONER ASSELSTINE CONTINUE TO SUPPORT THE RECOMMENDATIONS MADE IN NUREG-0957, WHICH WOULD PROVIDE FOR LIMITED ANNUAL RETROSPECTIVE PREMIUM PAYMENTS OF $10 MILLION PER REACTOR PER YEAR WITH NO OVERALL LIMIT ON LIABILITY.
B) DOE CONTRACTORS	NONE
C) DOE WASTE ACTIVITIES	NONE

WAIVER OF DEFENSES

A) ENO CRITERIA	THE COMMISSION RECOMMENDED IN NUREG-0957 THAT THE CONGRESS

RETAIN THE PRESENT STATUTORY LANGUAGE FOR THE FINDING OF AN EXTRAORDINARY NUCLEAR OCCURRENCE (ENO) IN ORDER TO ESTABLISH A DEFINITIVE BASIS FOR VALID CLAIMS AND TO CONSERVE RESOURCES TO PAY FOR THESE CLAIMS. THEREFORE, THE WAIVER OF DEFENSES WOULD NOT BE APPLICABLE TO ALL NUCLEAR INCIDENTS BUT ONLY TO THOSE INCIDENTS WHICH THE COMMISSION DETERMINES TO BE AN ENO.

ON APRIL 9, 1985, THE COMMISSION PUBLISHED IN THE FEDERAL REGISTER (50 FR 13978) PROPOSED RULES TO AMEND THE CRITERIA FOR DETERMINING WHETHER A NUCLEAR INCIDENT CONSTITUTES AN ENO.

THE FIRST AND SECOND OPTIONS IN THAT RULE RETAIN THE STRUCTURE OF THE EXISTING CRITERIA AND CONTAIN EXPLICIT CRITERIA FOR BOTH SUBSTANTIAL RELEASES AND SUBSTANTIAL DAMAGES. THESE OPTIONS EMPLOY ESTIMATES OF OFFSITE DOSES AND GROUND

CONTAMINATION AS INDICATORS OF SUBSTANTIAL RELEASES BUT HAVE SEPARATE CRITERIA FOR SUBSTANTIAL DAMAGES. THESE TWO OPTIONS ALSO SEEK TO AVOID THE MEASUREMENT PROBLEMS ENCOUNTERED IN APPLYING THE PRESENT CRITERIA FOR "SUBSTANTIAL DAMAGES" BY FOCUSING THE CRITERIA ON COSTS WHICH CAN BE READILY COUNTED OR ESTIMATED. THE FIRST TWO OPTIONS DIFFER IN THAT THE COMMISSION IS PROPOSING ALTERNATIVE WORDING OF THESE CRITERIA FOR PUBLIC COMMENT.

THE THIRD OPTION REPRESENTS A NEW AND ARGUABLY MORE SIMPLIFIED APPROACH TO ARRIVE AT ENO CRITERIA WHICH COULD BE READILY EVALUATED FOLLOWING A NUCLEAR INCIDENT. THIS OPTION FOCUSES ON ESTABLISHING THAT A MAJOR RELEASE OF RADIOACTIVE MATERIALS HAS OCCURRED WITH CONCOMITANT HIGH OFFSITE RADIATION LEVELS OR CONTAMINATION. IT DOES NOT REQUIRE THAT DOSES TO INDIVIDUALS BE EVALUATED, NOR DOES IT REQUIRE THAT PROPERTY DAMAGE ESTIMATES OR EVACUATION

CHARACTERISTICS BE EVALUATED. FURTHER, THIS CRITERION FOR SUBSTANTIAL RELEASES DOES NOT REQUIRE THE NRC STAFF TO EVALUATE EXPOSURE CONDITIONS FOR ACTUAL OR HYPOTHETICAL INDIVIDUALS AND, CONSEQUENTLY, WOULD SIMPLIFY THE DATA COLLECTION AND ANALYSIS FOLLOWING AN INCIDENT. THIS OPTION ALLOWS FOR DIRECT MEASUREMENT OF DISCHARGE OF MATERIAL OR RADIATION LEVELS, AND BY VIRTUE OF THE STRONG CAUSAL RELATION BETWEEN RELEASE OF RADIONUCLIDES AND DAMAGES,

	IT DEFINES, BY DIRECT MEASUREMENT, THE CONDITIONS UNDER WHICH THE CRITERION II REQUIREMENT OF SUBSTANTIAL DAMAGES IS MET. THEREFORE, PROCEDURAL BARRIERS TO A RAPID DETERMINATION SHOULD BE MINIMIZED.
B) STATUTE OF LIMITATIONS	THE COMMISSION RECOMMENDED IN NUREG-0957 THAT THE CURRENT 20-YEAR STATUTE BE INCREASED TO 30 YEARS TO PROVIDE GREATER ASSURANCE THAT LATENT INJURIES CAUSED BY A NUCLEAR ACCIDENT ARE PROVIDED PROTECTION.

Length of extension

The Commission can see no problem with a 25-year extension of the Act as contained in S.1225.

Precautionary evacuation

NUREG-0957 discussed this issue and noted that because neither the Price-Anderson Act nor its legislative history specifically addressed precautionary evacuations, it is uncertain whether costs arising from such an evacuation would be covered. Such a determination would at present be made by a court. The report

STATED, HOWEVER, THAT THIS QUESTION MAY BE OF LESS SIGNIFICANCE FOR NRC LICENSED AND INDEMNIFIED REACTORS THAN DOE CONTRACTORS SINCE THE PRIMARY AND SECONDARY INSURANCE PROVIDED BY THESE LICENSEES PROVIDE FOR THE PAYMENT "FOR LOSS OF USE OF PROPERTY WHILE EVACUATED OR WITHDRAWN FROM USE BECAUSE . . . OF IMMINENT DANGER OF SUCH CONTAMINATION."

ACTS OF UNTRACEABLE THEFT OR SABOTAGE

ALTHOUGH ADDRESSING THIS ISSUE WITHOUT MAKING RECOMMENDATIONS, NUREG-0957 REFERENCED A JUNE 9, 1975 REPORT WHICH WAS TRANSMITTED TO CONGRESS. IN THAT REPORT THE COMMISSION STATED THAT WHILE IT GENERALLY SUPPORTED THE PROPOSITION THAT PRIVATE INDUSTRY SHOULD ASSUME THE BURDEN OF RISKS THAT MAY BE CREATED IN UNDERTAKING A COMMERCIAL OPERATION, A CASE MIGHT BE MADE FOR AT LEAST PARTIAL GOVERNMENT RESPONSIBILITY FOR THE COSTS OF PUBLIC PROTECTION FOR INCIDENTS ARISING OUT OF SABOTAGE AND THEFT, PARTICULARLY WHERE THERE IS NO CLEAR CONNECTION BETWEEN

THE EVENT AND A SPECIFIC LICENSEE. THE 1975 REPORT FURTHER STATED THAT ALTHOUGH INCIDENTS ARISING OUT OF CERTAIN ACTS OF THEFT OR SABOTAGE ARE COVERED UNDER PRICE-ANDERSON, THERE ARE GAPS IN COVERAGE THAT THE AMENDMENTS INTRODUCED BY SENATOR RIBICOFF IN THE 93RD CONGRESS WOULD HAVE CLOSED PROVIDED THE NUCLEAR MATERIAL CAUSING THE CONTAMINATION COULD BE TRACED TO A PARTICULAR INSURED LICENSEE. WITHOUT THE ABILITY TO TRACE THE ORIGIN OF THE

MATERIAL, THE NRC VIEW WAS THAT ANY COMPENSATION TO THE INJURED PUBLIC SHOULD BE A GOVERNMENT RESPONSIBILITY.

COMMISSIONER ASSELSTINE ADDS:

COMMISSIONER ASSELSTINE NOTES THAT A SHORTER EXTENSION PERIOD SUCH AS TEN YEARS WOULD PERMIT FOR FURTHER CONSIDERATION OF OUTSTANDING ISSUES WHICH CANNOT BE RESOLVED DEFINITIVELY GIVEN PRESENT KNOWLEDGE, SUCH AS THE NECESSARY PROOF TO ESTABLISH THAT A PERSON'S INJURIES, PARTICULARLY LATENT INJURIES, WERE CAUSED BY A NUCLEAR ACCIDENT.

STATE OF WASHINGTON
OFFICE OF THE GOVERNOR

OLYMPIA
98504-0413

BOOTH GARDNER
GOVERNOR

July 22, 1985

The Honorable Pete V. Domenici
Chairman, Subcommittee on
Energy Research and Development
United States Senate
Washington, D.C. 20510

Re: Liability-Compensation Issues Pertaining to the Disposal of
High Level Radioactive Wastes

Dear Senator Domenici:

Thank you for your letter to me of June 27, 1985 in which you asked me to provide my views on several issues relating to renewal of the Price-Anderson Act.

You will recall that I stated the fundamental position of the Governor of Washington at your Subcommittee's hearing of June 25, 1985, viz., we urge Congress, at an early date, to enact legislation to establish a policy of strict, absolute and unlimited federal liability for damages and injuries arising from the federal government's implementation of the Nuclear Waste Policy Act (NWPA). Such legislation should include a "red-tape free" procedure to allow those entitled to compensation under the policy to be paid expeditiously for their losses.

Against this backdrop, I submit the following general responses to your inquiries.

S. 1225 is clearly pointed in the right direction. It not only expressly covers disposal of wastes under NWPA, but it removes from a state any liability for injuries arising from nuclear incidents associated with the NWPA's implementation. However, I do have concerns with S. 1225 in its present form. Foremost, it does not appear to embody unequivocally the policy of strict and unlimited federal liability --the cornerstone of our position. Further, we continue to be convinced of the merit of developing a specially tailored federal liability-compensation program that does not carry with it the complexities and ambiguities of the Price-Anderson Act in terms and concepts that have, over the past two decades, spawned considerable discussion.

This brings me to your second inquiry, which pertains to the issue of the imposition of strict liability as a matter of federal law. In most instances, I agree with your view that each state should be able to establish its own law of torts, including the area of hazardous activities. In the special area of nuclear waste disposal covered by NWPA, that general view need not necessarily be followed. This conclusion is based on the overriding federal dominance of the NWPA repository program through its ownership, control, and regulation of the radioactive wastes involved. In this area of supersaturated federal involvement, I believe a state's interests are fully protected by a federal act that: (1) provides full federal compensation for all injured by radioactivity-related incidents arising under NWPA regardless of the cause of the injury, and (2) removes all state liability arising from NWPA's implementation.

S. 1225, as you note, does contain a guaranteed but limited dollar amount immediately available for compensation of injuries and damages. Our view is that there should be no limit on the amount ultimately available. In this regard, you raise "numerous lawsuits" and "total bankruptcy" concerns. We believe that these concerns can be resolved adequately through carefully crafted compensation processes and definitions of statutory terms, such as "damages". As to the "additional compensation funds" and "expedited procedures" provisions of sections 5 and 6, this approach may satisfy our fundamental condition of full compensation, noted at the outset. We will continue to examine closely this approach.

You have noted H.R. 2524, introduced by Congressman Morrison of our state, and expressed concerns about the source of funds to satisfy claims after $5 billion in compensations have been paid. I have discussed this issue with the Congressman to ensure that existing federal statutes, such as the Anti-Deficiency Act, do not inadvertently block the intent of Congress if his bill, or some other similarly worded bill, were enacted.

I believe that "precautionary evacuations" arising from NWPA incidents should be subject to a full compensation policy. In this regard, we are in accord with your views that some mechanism, preferably implemented by a responsible state official at a relatively high level, should be established to guard against abuses of the type you describe. The principle goal of assuring safety and protection of the public should predominate this aspect of the bill.

You lastly inquire about our position that a specially tailored liability-compensation program be developed "separately from the Price-Anderson provisions for nuclear plants". I have no opposition to inclusion of a separate title or section in S. 1225 (or other similar bill) that addresses directly the liability-compensation issues relating to NWPA's implementation.

I want to express my appreciation for the opportunity to express views on this most important subject. You may be assured of our full and complete cooperation. The issues involved are too important to warrant less.

I close by noting that Washington is now working actively with similarly situated sister states in a legislative drafting effort that is designed to bring about, to the maximum extent possible, a position of unity in this area which so critically needs to be addressed. In this regard, Washington's position as to "liability-compensation" issues under NWPA is founded on four cornerstones that we believe accomodates all legitimate federal and state interests including the protection of the public. Generally they are:

1. Absolute federal liability for radioactivity-related injuries and damages without regard to fault, i.e., strict liability;
2. Compensation to all persons and entities injured or damaged, i.e., unlimited compensation;
3. A mechanism that allows those injured or damaged to be compensated expeditiously and without any undue burdens, i.e., a "red-tape free" compensation recovery procedure;
4. Removal of all liability of a state, i.e., the United States "holds harmless" a state (and its various governmental arms) from liability for NWPA's implementation.

I trust my response will be of assistance to you.

Respectfully,

Curtis Eschels

Curtis Eschels
Special Assistant for Policy

cc: Congressional Delegation

CE:lao

HEALTH AND ENVIRONMENT Department

STATE OF NEW MEXICO

ENVIRONMENTAL IMPROVEMENT DIVISION
P.O. Box [illegible], Santa Fe, New Mexico [illegible]
[illegible]

TONEY ANAYA
GOVERNOR

DENISE D. FORT
DIRECTOR

July 15, 1985

The Honorable Pete V. Domenici
United States Senate
Committee on Energy and Natural Resources
Washington, D.C. 20510

HAND DELIVERED

Dear Senator Domenici:

Thank you for the opportunity to respond to the questions expressed by you and Senator McClure. We appreciate your efforts on behalf of the State of New Mexico to ensure that protection is provided for our citizens and the State under the Price-Anderson Act. Our comments concerning Price-Anderson issues apply only to nuclear waste transportation and storage, and do not concern commercial nuclear power plants.

Responses to Questions For the Record

1. S. 1225 addresses some of New Mexico's concerns with Price-Anderson, but could go further in several cases.

a. The bill could be more explicit in assigning responsibility for all waste disposal incidents. First, it could unequivocally express the Department of Energy's liability for nuclear incidents that result from the storage and disposal of radioactive wastes. The only language in the bill that addresses DOE liability, found at Sec. 9, provides:

> [T]he Secretary shall, to the extent that such activities are not undertaken by contract, be considered as if the Secretary were a contractor with whom an indemnity agreement has been entered into . . . .

By equating the status of DOE with that of a contractor for liability purposes, the implication is made that DOE is responsible only for its contractor-like activities and not for its sovereign decisions and actions.

Second, the bill should expressly mention the Waste Isolation Pilot Plant in New Mexico by name. As you know, the WIPP is experimental and is excluded by law from the NRC licensing process. Because of its unique status, I attached to my testimony some specific suggestions for language changes to the bill to ensure that the WIPP is included. The legislation that authorizes construction of the WIPP, P.L. 96-164, expressly states:

> No law enacted after the date of the enactment of this Act shall be held, considered, or construed as amending, superseding, or otherwise modifying any provision of this section unless such law does so by specifically and explicitly amending, repealing, or superseding this section.

Because one could argue that express inclusion of DOE in Price-Anderson could be considered a modification of the relationship established by P.L. 96-164, it would be best to also mention WIPP by name and refer to P.L. 96-164. This could be done by inserting the words "including the Waste Isolation Pilot Plant" after each reference to facilities for the storage or disposal of [nuclear] waste. A provision would be added to amend P.L. 96-164 to say that the WIPP is expressly covered by the indemnification provision of the Atomic Energy Act.

b. The bill falls short of assuring victims full compensation following a waste-related accident. Although it uses the term "full compensation" in its prefatory language, the bill does not provide statutory entitlement to compensation beyond the three tiers of coverage enumerated.

We recognize that concerns have been expressed with exposing the coffers of the United States government to unlimited liability. New Mexico is the host state to an experimental facility that will store large quantities of transuranic waste in perpetuity and high level wastes for a substantial period of time. As such, we are acutely aware of the fact that the transportation and storage of such material, especially on an experimental basis, carries with it risks that no one can calculate with any degree of certainty. In that sense, the risk that is inherent in the decision to contract and use such a facility is "unlimited." To the extent that that risk exceeds the current statutory limit, New Mexico and its citizens have "unlimited" liability. To the extent that the United States government decides to limit its own liability, New Mexico and its citizens remain liable without limit. To limit liability to a certain level does not, of course, reduce the inherent risks associated with any undertaking. It merely prevents the risk from being shifted. In this case we think that the United States government should bear full responsibility for the risks associated with its waste facilities. To the extent that it fails to do so, New Mexico is left with that risk. The concept of "limiting" liability is a fiction because someone will always be "stuck" with the risks that remain.

We understand that the bill is not perceived or characterized by its supporters as imposing any limitation. The funding mechanism provided is designed to provide an initial "pot" that is available for immediate containment and cleanup of the site of a nuclear incident. The question of additional compensation, especially for latent disease, is to be addressed by Congress after the submission of a report by the President. The fact that Congress may, after an incident, decide to accept liability beyond the level set in the bill leaves the issue unresolved. We question the ability of anyone to accurately predict the extent of the damage, especially latent disease, within the ninety days allotted by the bill.

The federal government should leave itself the option of sharing its liability not only with its contractors but with anyone whose negligence may contribute to a nuclear incident, including, for example, the manufacturers of components used in handling nuclear materials.

c. We are satisfied that New Mexico is a "person indemnified" within the meaning of 42 U.S.C. § 2014(t). That provision encompasses both persons with whom indemnity agreements are executed or who are required to maintain financial protection and "any other person who may be liable for public liability."

2. New Mexico does impose strict liability on defendants who engage in "abnormally dangerous" activities. First Nat. Bank in Albuquerque v. Nor-Am Agr. Products, Inc., 88 N.M. 74, 537 P.2d 682 (Ct. App. 1975), cert. denied sub nom New Mexico Mill & Elevator Co. v. First Nat. Bank in Albuquerque, 88 N.M. 29, 536 P.2d 1085 (1975).

Although New Mexico appellate courts have not considered the application of strict liability to the handling of nuclear materials, it is probable that such activities would be characterized as abnormally dangerous.

We have no problem with the concept of state law applying in the absence of an Extraordinary Nuclear Occurrence. There is, however, no clear statement that that would be the case, especially if a claim were asserted against the federal government. A sentence that specifies that "the law of the situs of the accident will apply" would rectify this concern.

3. a. The $2.4 billion figure is the maximum amount available under the S. 1225 structure. It assumes that the 94 commercial nuclear reactors that are currently on-line will remain on-line until 2012, the duration of the proposed amendment. It also assumes that all twenty-one nuclear power plants that are covered by construction permits will come on-line and remain on-line. Given the twenty to forty years expected life of a plant and the fact that many existing plants are already ten to twenty years old, this may not be realistic. It also assumes that coverage of $500,000,000 per

incident could be collected by a one mil per kilowatt-hour surcharge on electricity generated and sold by commercial nuclear plants after an incident. A substantial nuclear incident at a commercial plant could cause a reassessment of the safety of other plants of similar design. This could result in a substantial diminution in the amount of electricity generated by nuclear plants after an incident, with a corresponding diminution of the level of compensation available for a subsequent waste-related incident. Thus, the $2.4 billion figure is an upper limit, but does not tell us how much money would actually be available. The fact that there is no inflation factor raises the concern that the figure, even if adequate in 1987, may not be adequate in 2000.

3. b.&c. We think that the scheme set up under S. 1225 is an improvement over the current provisions. The language in Section 6 that requires the President's report to set forth "the estimated requirements for full, equitable, and efficient compensation and relief of all claimants" is a positive step. Yet we are skeptical that the President will have the capability to accurately assess in ninety days the extent of damage and predict the cost of compensation for latent illnessess that may not become manifest for twenty to thirty years. Once an incident has occurred, we think that there will be a concerted effort by the responsible party or parties to affect Congressional decision making. This would force the State and its citizens to spend their resources fighting an essentially political battle. We think that the ground rules should be established now. We also do not think that an after-the-fact attempt to fashion a solution could be done quickly. New Mexico is facing major problems in assigning liability for its existing environmental problems after they have been created. Examples are uranium mill tailings piles and gasoline contamination of groundwater.

4. The compensation provisions of H.R. 2524 obviously provides more coverage. The fact that the bill does not identify a fund does not affect the ability of the federal government to provide complete indemnification for its activities. This scheme is no different than that established for tort actions. Although it does not set up a compensation fund to cover every possible claim that could be filed against it, the federal government recognizes that it has what amounts to unlimited exposure for tort claims. Appropriations are made as the need arises. The Anti-Deficiency Act only prohibits an officer or employer of the United States from creating a new obligation that exceeds an appropriation. Its object is to prohibit federal contracting beyond limits set by Congress. Here we are not concerned with the administrative creation of a debt; we are concerned with whether the federal government should limit its liability for the risks associated with its activities.

5. It would be reasonable to require a declaration by the Governor of a state as a prerequisite to a precautionary evacuation and, perhaps, to set standards by regulation for such a declaration. New Mexico is concerned

that under current law a release would have to occur before a compensable evacuation could be effectuated.

6. Please see the response to question 1.a.

7. The studies and estimates of worst-case nuclear incidents involving the transportation and storage of nuclear waste run the gamut in cost. Further research is needed in this area. We therefore cannot say with scientific certainty whether $2.4 billion is sufficient or not. If, as explained in detail in the response to question 3.a., the number of commercial nuclear power plants on-line is less than predicted, the compensation level could be substantially lower than $2.4 billion. Also, if we see a return to the high inflation of recent years, the real dollar value of the compensation available will diminish on the twenty-five year life of the amendment, while the inventory of wastes transported and stored grows.

8. The interpretation of the statute of limitations provision that you adopt is plausible but the language is far less than clear to me and others whom I have consulted on the issue. The clause "but in no event more than twenty years after the date of the nuclear incident" sounds preemptory and final. We recommend that language be added to clearly state that the law is as you interpret it. The following sentence could be added after the above-quoted clause:

> No state is precluded from enacting or applying a longer statute of limitations to any action involving a claim arising out of a nuclear incident.

New Mexico has a three-year limitation on actions for personal injury. The statute starts to run at the manifestation of an injury. § 37-1-8 NMSA; Garcia v. Presbyterian Hosp. Center, 92 N.M. 652, 593 P.2d 487 (Ct. App. 1979).

9. Please see the response to question 2.

Sincerely,

Laure van Heijenoort

LAURE VAN HEIJENOORT
General Counsel

LvH/sb

PRICE-ANDERSON TABLE

Issue	Position*
Limit on Liability:	
a) NRC licensees	None
b) DOE contractors	Unlimited liability
c) DOE waste activities	Unlimited liability
Waiver of Defenses:	
a) ENO criteria	None
b) Statute of Limitations	Needs clarification that statute establishes minimum timeframe
Length of Extension:	Acceptable. If limit on liability, should have inflation adjustment factor
Precautionary Evacuations:	Yes, upon Governor's proclamation

Acts of Untraceable Theft or Sabotage:	**Should cover**

***If no position has been established indicate "none."**

AMERICAN
NUCLEAR
INSURERS

BURT C. PROOM, CPCU
President and Chief Executive Officer

OFFICE OF THE GENERAL COUNSEL
Joseph Marrone
Vice President and General Counsel

July 19, 1985

Senator Pete V. Domenici
Chairman, Subcommittee on Energy
Research & Development
Dirksen Senate Office Building
Room 358
Washington, D.C. 20510

Dear Senator Domenici:

This is in response to your letter of July 2, 1985 enclosing questions for the Nuclear Pools and a supplemental enclosure under separate cover of a Price-Anderson Table of issues.

We are pleased to submit the Pools' answers as to your questions and to give a brief outline of their position on the issues listed in the Table.

Question No. 5 and Question No. 10 cover timely issues that are difficult to deal with in the short space available here. We are, therefore, enclosing two copies of a series of reports on Price-Anderson issues commissioned by the Nuclear Pools and dated March, 1985. Two of these reports deal with these issues in much greater detail:

> "The Economic Foundations of Limited Liability for Nuclear Reactor Accidents" by Louis A. Cox, Jr. & Irving Plotkin of Arthur D. Little, Inc. (Question 5)
>
> "Review of Nuclear Liability Compensation Systems Applicable to Reactors Outside the United States" by Colin McIntosh of OECD Nuclear Energy Agency. (Question 10)

Very truly yours,

Richard A. Schmalz
Richard A. Schmalz
Counsel to the Pools

RAS/jr
Enclosures

The Exchange Suite 245 / 270 Farmington Avenue / Farmington, Connecticut 06032 / (203) 677-7305 ■ Eng. Dept. (203) 677-7715 / TLX No. 643-029

ANSWERS TO QUESTIONS ADDRESSED TO NUCLEAR INSURANCE POOLS

1. What are the key ingredients needed to increase the capacity of the nuclear insurance pools? What factors could result in a decrease in insurance capacity? What factors are irrelevant to the size of the insurance capacity?

The significant ingredients needed to increase capacity are --

- o Strong support of a reasonably balanced private nuclear power program by the Federal government.

  This does not mean that there should be any lessening of safety considerations. But all elements of the program must be coordinated, and the Federal government must take a leadership role. The insurance of nuclear risks is a difficult matter at best because the probability of a catastrophic accident is very low, and yet such an accident could have very costly consequences.

- o Reasonable financial protection standards.

  A sound financing plan for low probability events with potentially high cost consequences includes two key elements: the accumulation of a reasonable "working fund" or reserve in advance (such as that provided by the Pools' guaranteed cost liability insurance), and the postponement of collecting any additional funds until after an accident actually happens (such as the Price-Anderson retrospective premium assessment plan). However, there is a limit to the amount that can be safely raised after a catastrophic loss by retroactive assessments. This is all the more true when one considers that a similar funding plan is in use for the onsite damage, which can easily exceed a billion dollars.

- o Channelling all liability for a nuclear accident to a single plant licensee and limiting that liability to a reasonable amount.

If the world insurance markets perceive that our Federal government is no longer willing to support a balanced program, this would be viewed as undercutting the viability of the program and adversely affecting its safety -- a perception that will cause them to divert capacity to less risky ventures.

Factors that would be likely to result in immediate and substantial decreases in the pools' capacity are --

- o Destruction of the channelling concept. This concept depends on the principle of an absolute limitation on liability. We have not seen any proposals for removing the absolute limit on liability that effectively preserve channelling.

- o Removal of the nuclear exclusions from standard liability and property coverages.
- o Removal of claims handling expenses from the policy limit.
- o Watering down or removal of the "extraordinary nuclear occurrence" threshold now required for "waiver of defenses".
- o Extending the discovery period beyond the present maximum of 20 years after the end of the policy period.

Factors that are irrelevant to the size of insurance capacity would be a reasonable increase in the amount of retrospective premium assessments and the consequent increase in the limitation on liability.

2. Is the present limitation on liability holding the insurance capacity to an artificially low level? Would removal of the limitation cause the capacity to increase?

No, the present limitation on liability is not holding capacity to an artificially low level. A reasonable limitation on liability is necessary to maximize capacity. The removal of the present limitation would cause insurance to be reduced substantially, and could cause the market for private insurance to disappear.

3. If DOE were to require each of its prime contractors to purchase private nuclear insurance, would this result in an increase in insurance capacity?

No, such a result would be most unlikely because the risks involved in DOE operations are so different from those associated with our commercial nuclear power program.

Shortly after Price-Anderson was enacted in 1957 insurers hoped that a way could be found to accommodate private insurance within the government contractor program. The objective was to obtain a broader spread of risk. Despite the best efforts of representatives of the insurance industry and the government, it turned out that, as a practical matter, the two programs could not be combined in any way that would make a significant increase, if indeed any increase, in insurance capacity.

The risks arising out of the operation of nuclear power plants are of the same nature, although there may be some variation from plant to plant in magnitude. This permits the use of an industry credit rating plan under which reserves are accumulated for the entire program for a moving 10 year period. An accident at any one plant can draw down the reserve premiums contributed by the others. Such an arrangement greatly increases the amount of private insurance capacity, but the rationality and equity of this kind of rating plan depend largely on the fact that the risks of each plant operator are essentially the same.

The risks involved in the government contractor program vary widely and are also different in nature from those in the commercial power program. In many cases they involve defense projects that would not ordinarily be undertaken by private enterprise. Such projects involve risks that cannot be priced accurately by private insurance markets and cannot be brought within the industry credit rating plan. The government's long-standing policy of insuring its own risks makes it extremely difficult to develop any alternative rating plan that will attract private insurance capacity.

The result of these early investigations was that both industry and government representatives reached tacit agreement at that time that it was not desirable to force a mix of insurance for the two essentially incompatible sets of risks. The insurance industry, however, agreed that it would provide claims service for the contractor program at the government's request should the need arise. A service contract with the former Atomic Energy Commission has been maintained between the Nuclear Pools and DOE.

We believe that the conclusions reached in the early years of the Price-Anderson program are conceptually sound today.

4. To what extent do non-U.S. nuclear utilities participate in the nuclear insurance pools? Would changes in Price-Anderson have an effect on the non-U.S. participation? How so?

Non-U.S. nuclear utilities are not directly insured by the U.S. nuclear pools, but by local pools or similar associations which have no formal connection with the U.S. pools. However, to obtain a better spread of risk, the pools and associations worldwide cross-reinsure each other under a variety of arrangements. Over 50% of the capacity of the U.S. pools comes from foreign sources.

Changes in Price-Anderson can, therefore, have a substantial effect on the reinsurance support we receive in the United States. Changes which increase the risk for U.S. based insurers automatically increase the risk for insurers everywhere. If the U.S. nuclear risks are perceived as open-ended, unpredictable or uninsurable because of expansive liability concepts, the world market for nuclear liability insurance will disappear. The sensitivity of worldwide insurance markets to our political and judicial attitudes towards industrial liability is borne out by the virtual disappearance of pollution liability coverage.

5. Why aren't traditional free-market approaches to liability insurance not well suited to a regulated industry, nor to catastrophic risks?

The traditional free-market approach depends on a rather tenuous blend of legal and economic theory. The assumption is that under free-market conditions firms will automatically strike the most economically efficient balance in allocating resources. Safety has certain economic costs associated with it, including the costs of paying damages. Hence, the assumption is that the free-market can optimize safety.

There are several flaws and weaknesses in this traditional approach and in its practical applications. Economics is not an exact science, but is probabilistic in nature. A high degree of knowledge and predictability is assumed, which enables the market to arrive at efficient prices. The costs of safety, however, are heavily influenced by the costs of handling claims and paying liability judgments or settlements. These costs are not determined by the market, but by our legislative, judicial and social attitudes, which change in unforeseeable ways. Safety costs are thus much more difficult to predict than those of hard goods and services.

For catastrophes, or "lumpy" risks, it is impossible to predict with reasonable accuracy for any short term the "true" cost of safety for any one firm. The problem is compounded for firms, such as those engaged in developing nuclear power, where injuries may not become manifest for 20 years or more. It is apparent that no firm is in a position to make rational decisions as to the amount or kind of safety precautions to take to optimize safety costs.

These inherent weaknesses in the traditional free-market liability approach are further compounded for regulated industries, such as the nuclear power utilities, because the free-market theory of economic efficiency depends on a free-market. It cannot be transported to regulated monopolies.

6. How are other non-nuclear, potentially-catastrophic risks covered within the insurance industry? How much coverage is generally available for other industries with high risks (the chemical industry, explosives, oil-well drilling)? Is the amount of liability coverage available within the nuclear industry generally higher than that normally available in other high-risk industries?

Perhaps it may be said as a general rule that, for the industries mentioned, coverage is not written through pools, but through ad hoc arrangements which involve many intricate layers of primary and excess coverage placed in world markets. The amount of coverage available varies substantially, even over short intervals. Usually, when there have been no serious losses for a few years, capacity rises. A bad turn of events will result in sharp drops and substantial premium increases.

In most non-nuclear industrial activities, even those considered to be high-risk, there is neither the size-of-loss potential that is associated with nuclear power, nor the so-called "long tail" factor: that is, the rating problem that results when the bulk of injuries do not become manifest until years after the accident. This is less true of the chemical industry, which has just had the largest industrial accident in history, while being simultaneously burdened with the hazardous wastes problem. The chemical industry is much larger than our nuclear power industry, but nevertheless, coverage for gradual pollution has all but disappeared. And since Bhopal, even coverage for sudden and accidental pollution has been reported as "extraordinarily difficult to buy."

The performance of the nuclear pools has been much more stable in maintaining high limits of insurance available. They began with a capacity of $60 million in 1957 (about 6 times higher than the amount generally available at that time). Their capacity is now $190 million ($30 million of this is reserved to backup the second layer of financial protection). It is highly doubtful that this figure can be matched today for many non-nuclear lines having a comparable, or even lesser loss potential, should a catastrophic accident occur.

7. How much onsite property insurance is available today for nuclear utilities? How much has this insurance increased since Three Mile Island? How is this insurance structured? Does it include self-insurance or retrospective premium assessments?

The nuclear pools provide $500 million of primary property damage coverage. This is guaranteed cost insurance with no retrospective premium assessments. A similar amount of primary property damage coverage is also available from a utility owned captive in Bermuda. This insurance may require assessments from members. Coverage from these sources may not be added. The corresponding figure available at the time of the Three Mile Island Accident, which was covered by the nuclear pools, was about $300 million. The primary coverage in both cases is subject to deductibles, which may be regarded as a form of self-insurance.

Since Three Mile Island, the nuclear pools have developed $85 million of guaranteed cost excess coverage. The utilities have developed, through a separate Bermuda captive, sufficient capacity to provide a total of $500 million excess capacity when combined with the pools' coverage. The utility excess coverage is subject to assessments.

8. What are the annual insurance premiums for nuclear utility property insurance? How does this compare to the annual liability insurance premiums?

For the nuclear pools, the 1984 annual property insurance premiums were $122.5 million, while the liability insurance premiums for the same period were $35.5 million.

9. Do insurance companies bring a lot of pressure to bear on the utilities to operate safely? Is the pressure related to the insurance companies' concern over onsite property damage, or to their concern about liability for offsite damage?

Insurers routinely inspect nuclear power plants for underwriting both their onsite property damage policies and their offsite liability policies. They do not make general safety inspections. However, if they find conditions that appear to them to be unduly dangerous, they have the right, under their policies, to request the insured to correct the condition without delay. In the event of failure to comply with such a request, the insurers may suspend coverage. The Pools maintain a staff of qualified health physicists and engineers to evaluate the risks to the underwriters under their policies. The reports and recommendations of these technically trained people are used by the underwriters to modify rates for individual policyholders to reflect differences in the hazard presented.

The Pools' engineering evaluations and underwriting procedures undoubtedly have a positive effect on overall safety to onsite workers and the public, but it would be difficult or impossible to quantify this effect, since policyholders maintain their own more comprehensive facilities, and the NRC closely regulates safety.

10. How do liability insurance programs in foreign countries compare to our Price-Anderson system? (Especially with respect to pooling of risks, government indemnification, private insurance capacity, liability limits, strict liability provisions, and statutes of limitations.)

We respectfully refer you to an excellent summary by Colin Mcintosh in his recent "Review of Nuclear Liability Compensation Systems Applicable to Reactors Outside the United States". At the risk of great oversimplification, insurance is usually provided through nuclear pools; substantial amounts of government indemnification are provided, usually starting at fairly low levels; private insurance requirements range from a low of $2.4 million in Spain to $200 million in West Germany, with the next highest amounts being $66 million in Sweden, $61 million in Canada, $40 million in Japan and $31 million in the United Kingdom. Liability is usually limited as a practical matter to the amount of financial protection required, although in some cases it is technically unlimited (Japan, Switzerland).

Liability is generally strict on proof of a causal connection with the nuclear power hazard, and is channelled exclusively to the operator. The basic period of limitations under the Paris Convention is ten years after the accident, although this may be extended under national law. States following a similar ten year maximum are Canada, France(in some cases, fifteen years), Sweden and Japan. Spain allows twenty years. Switzerland, West Germany and the United Kingdom allow thirty years. In the case of West Germany, however, the German pool limits coverage to ten years, with the government paying claims filed after that time. Sweden pays claims barred by the ten year limit out of public funds if made within thirty years.

Perhaps the most significant differences between liability insurance programs in foreign countries and in the United States are --

Financial protection requirements are much lower abroad.

The damages recoverable are generally lower in amount and less broad in scope than those recoverable under our tort sysytem.

Foreign governments appear to be more willing to commit public funds to the payment of accident costs under their nuclear power programs, starting at much lower levels than here.

11. From an insurance perspective, what would be the effect of a complete lifting of the statute of limitations (in contrast to the present 20-year statute of limitations)?

The 20-year ENO limitation period, which begins to run from the date of the occurrence, does not override any longer limitation periods granted by state law. In the United States, unlike Europe, nuclear liability policies are continuous. A single policy may remain in effect for the life of the power plant and normally provides an additional 10 year discovery period after termination. Thus insurers can be at risk for well over 20 years, for incidents early in the life of a policy.

The most crucial period for private insurers, however, occurs when a policy terminates. It is virtually impossible to develop a satisfactory rating plan or to put aside adequate reserves beyond the normal 10 year span of the Industry Credit Rating Plan.

This "long tail" rating problem is made much more difficult by the present 20-year ENO limitation, as it overides the standard 10-year discovery period if the shorter period would bar a valid claim made within the 20-year ENO period. This also can put insurers at risk for a much longer period after policy termination than is the custom in foreign countries. There the government often steps in when the 10-year period after the accident date is exceeded.

Accordingly, the pools expect that any extension of the present 20-year limitation period that aggravates the long tail rating problem will substantially reduce the pools' capacity.

12. What factors do you consider in setting insurance premium rates for the various utilities?

The primary factor used to reflect variations in risk among nuclear power plants is underwriting judgment, taking into account any actual loss and operating experience available. The objective is to modify individual risk premiums in a fair, rational manner to correspond with comparative risk.

The nuclear pools consider the following risk characteristics in rating commercial power reactors --

1. Type,
2. Size,
3. Location,
4. Containment,
5. Operating Experience.

"Size" and "Location" are usually the most variable factors and have the greatest effect on premiums. The relative risk attributed to "Size" is based on engineering evaluations of the exposures presented at various power levels. If all other risk characteristics are equal, a larger reactor will pay more in premium than a smaller unit.

The underwriting evaluation of the "Location" exposure centers around population densities and offsite property values. Such things as seismology, meteorology, hydrology and containment are also considered. Again, with all other risk characteristics equal, a reactor located in an environment with higher population densities and property values will pay a higher premium.

In evaluating risk variation due to "Operating Experience", underwriters consider such factors as radiation exposures to onsite personnel, offsite releases, NRC violations, abnormal occurrences, low-level waste shipments and compliance with the Pools' engineering recommendations.

Liability premiums are adjusted annually to reflect changes in risk characteristics and inflation. Premiums vary substantially from site to site, currently ranging from about $286,000 to $837,000 a year for $160 million of coverage.

13a What is the normal policy of the insurance industry for coverage of the costs of investigation and settlement of claims? What is the normal practice for nuclear insurers?

The normal policy for primary insurers providing fairly low limits of coverage has been to pay such "defense costs" in addition to the limits for liability payments. The practice of excess insurers has generally been to include defense costs and liability payments under one limit, although in some cases no defense costs are covered, and in others the practice of primary insurers is followed.

The normal practice for nuclear insurers is to include both defense costs and liability payments within the limit of coverage. This practice has been followed since 1957, as it maximizes capacity.

A consensus is now developing in world insurance markets that the nuclear practice should be adopted for standard commercial liability policies. Insurance Services Office, which prepares standard liability policies widely used by the insurance industry, plans to introduce new standard policies incorporating this change in 1986.

13b If costs of investigation and settlement of claims were excluded from Price-Anderson coverage, would this reduce the capacity of the insurance pools? Why or why not?

Such a change would reduce the capacity of the insurance pools substantially for two reasons. It would be contrary to the direction in which the world insurance markets are moving. But more important is the fact that open-ended defense obligations in addition to high limits for liability payments add up to larger and more unpredictable total risk. This means that substantially less capacity will be available at any given premium level. This is why insurers will be shifting generally to the more efficient Price-Anderson system.

14. Would insurance provided by the nuclear insurance pools cover the costs of precautionary evacuations?

The pools' insurance has been applied to pay for certain immediate and direct costs of precautionary evacuation where there was imminent danger of substantial off-site contamination of property. The Three Mile Accident is an example that falls within this principle, even though Governor Thornburg's motivation for his evacuation advisory may have been public safety.

15. In Commissioner Bernthal's testimony, he addressed the issue of punitive damages. In his opinion, if punitive damages were allowed to be paid with Price-Anderson insurance funds, this would remove the deterrent value of such damages, because the insurance pools, and not the utility at fault, would be responsible for the payments. Do you agree with Commissioner Bernthal that punitive damages should not be insurable under the Price-Anderson Act?

We would agree with what we take to be the sense of Commissioner Bernthal's remarks, although our own views may go beyond his.

We believe that no punitive damages should be recoverable in any case where the injury or damage is subject to the financial protection requirements of Price-Anderson, with the possible exception of injury or damage caused by willful or wanton misconduct which a trier of fact finds, on the basis of clear and convincing evidence, to be equivalent to an actual intention to do harm. In such a case, punitive damages should not be insurable, because, as Commissioner Bernthal points out, this would remove the deterrent value of such damages.

Under the law of some states, however, it is possible to recover punitive damages for the conduct of others under the theory of vicarious liability, or even for conduct that is virtually indistinguishable from ordinary negligence. Although insurers deplore such practices as an abuse of tort law, they are generally willing to provide coverage for punitive damages in such cases unless it is against the public policy of the applicable state law.

16. Commissioner Bernthal also commented on the Silkwood decision, in which the Supreme Court held that a state may award punitive damages against an entity regulated by NRC for actions the jury finds negligent, even though no NRC regulations were violated. In Commissioner Bernthal's opinion, this decision sets a bad precedent, because it in effect allows "every jury in America ... (to) theoretically serve as its own Nuclear Regulatory Commission."

Do you agree with Commissioner Bernthal's opinion? Do you feel that Congress should amend the Atomic Energy Act to reaffirm its principle that licensee fully in compliance with NRC regulations should not be held liable for punitive damages?

Yes, we agree with Commissioner Bernthal's opinion. It is well stated, and by no means an exaggeration. In the framework of modern tort law in the United States, even threats of punitive damages cause a substantial diversion of resources from the purpose of providing compensation to the many deserving accident victims, while providing windfalls to others.

As we indicated in our answer to the previous question, however, we would apply the principle of eliminating punitive damage recoveries more broadly than just for cases of compliance with NRC regulations. Any such violations are already subject to fines and penalties, which can be toughened, if that seems appropriate. We believe that Price-Anderson was intended to be a compensatory system. The pressure to increase the limitation on liability indicates that there may be a shortage of funds for such purpose.

17. If waiver of defenses were applied to all nuclear incidents, would this provide an additional strict liability remedy to onsite workers, who already have a strict liability remedy in workers' compensation? Is it wise to provide a strict liability remedy for radiation releases that may in fact be within radiation limits established by the NRC?

Yes, such an extension of the waiver would in many cases provide such an additional remedy. It would also provide a strict liability remedy to persons offsite for such radiation releases. We believe this would not be wise.

Price-Anderson was intended primarily to protect offsite persons from the effects of clearly identified, large scale accidents, and not from the injury that some may claim to be attributable to normal operations. The causal connection between low-level industrial exposures to radiation and cancer is in doubt, because any such cancers would be indistinguishable from those due to other known or suspected causes. Extension of the waivers would invite filing a much larger number of doubtful claims from low-level exposures against the financial protection than at present.

PRICE-ANDERSON TABLE

Issue	Position*
Limit on Liability:	
a) NRC licensees	An absolute limitation on liability should be retained at a reasonable level, backed up by supplemental Government assistance, should the limitation ever be exceeded.
b) DOE contractors	Although the Pools are not directly concerned with DOE contractors or waste activities, they believe a consistent limitation on liability and supplemental assistance program would be appropriate.
c) DOE waste activities	(Same as b) above.)
Waiver of Defenses:	
a) ENO criteria	The Pools have no objection to technical changes in the ENO criteria as long as the substance of the present threshold is maintained.
b) Statute of Limitations	The present Statute of Limitations should be retained.
Length of Extension:	The Price-Anderson program should be extended indefinitely or for a long period, such as 25 years, subject to periodic review and adjustment, if needed.
Precautionary Evacuations:	We believe the present provisions for emergency assistance are appropriate and adequate.
Acts of Untraceable Theft or Sabotage:	The Price-Anderson Act should not be used as a mechanism for compensating victims of criminal acts, particularly if private funds were used, as this would impose a unique burden on the nuclear industry. It seems more appropriate for the Government to take ad hoc action, should a case arise.

*If no position has been established indicate "none."

ENVIRONMENTAL POLICY INSTITUTE

July 9, 1985

Chairman Pete V. Domenici
Subcommittee on Energy Research and Development
Senate Committee on Energy and Natural Resources
U.S. Senate
Washington, D.C. 20510

Dear Chairman Domenici:

Thank you for the opportunity to restate our views on issues raised during the June 25 hearing on S. 1225. Attached are written responses to the questions sent by your Committee on June 27. If you have any additional questions regarding our position on these matters, please feel free to contact me.

Sincerely,

Keiki Kehoe

Keiki Kehoe
Washington Representative

Attachments

218 D Street, S.E., Washington, D.C. 20003 (202) 544-2600

Questions for the Record
Environmental Policy Institute

From Senators McClure and Domenici

QUESTION 1.

Your group appears to have two objectives in mind with respect to the nuclear liability issue: 1) maximum accountability and 2) full compensation. It seems to me that these two objectives cannot be mutually complimentary to one another: that is, in order to maximize accountability, one must assign all liability to the one utility that experiences the accident, and this would limit the available compensation solely to the assets of that particular utility, which is certainly no guarantee of "deep pockets."

So, I am not sure you can achieve both objectives. Furthermore, I don't believe it was ever the intent of Congress to make Price-Anderson the vehicle for accountability -- rather, it was created to ensure that adequate funds would be available to the public to compensate for losses in the event of an accident.

With respect to accountability, we already have a system of regulations and enforcement of safety standards that we established under the Atomic Energy Commission, and is now carried out by the Nuclear Regulatory System. Of course, there are other very strong incentives for the safe operation of nuclear plants, not the least of which is the tremendous capital investment, and the self-imposed pressure from the Institute of Nuclear Power Operations (INPO).

Are you saying that you would prefer that each utility be held individually liable -- in effect, a "free market" approach -- in order to maximize accountability within the nuclear industry? Would you be willing to sacrifice the maximization of public compensation in order to achieve this kind of accountability?

ANSWER

We do not believe that the goals of industry accountability and full compensation are mutually exclusive. The Price-Anderson Act can, and should, be modified to accomplish both. There are several ways that the proposals on the table could be modified to more effectively accomplish these two goals.

The following are three options which would go further than any of the existing legislation to accomplish these goals:

Option 1: The compensation provisions of S. 1225 could be combined with the accountability mechanism of S. 445. In other words, if the compensation provided under S. 1225 were not adequate to fully compensate the public after an accident, the utility responsible for the accident, or any other party found liable, could be sued by anyone who was not fully compensated. This would provide another layer of compensation which, depending on the assets of the party or parties involved, could be significant. Although this approach may still fall short of providing full compensation for all damages, it would go further than S. 1225 in identifying the source of additional compensation and in achieving the goal of accountability.

Option 2: The accountability mechanism of S.445 could be combined with the compensation scheme proposed by the NRC. In other words, the "free market" would be allowed to work to the extent of the assets of whatever party was liable; if that was not sufficient to fully compensate damages, all other nuclear licensees would be subject to annual assessments. This would allow the NRC assessment scheme to come into play as a "safety net" to assure full compensation only after other sources of funding had been exhausted.

Option 3: The compensation scheme proposed by the NRC could be combined with an accountability mechanism, such as a subrogation clause, standard for other insured risks. In other words, full compensation for damages could be assured through an annual utility assessment mechanism. If some party--such as the utility or a supplier--is found to have caused the accident through negligence or reckless behavior, utilities who have been subject to assessments could seek to recover their assessments from the liable party.

In response to your concerns about the Price-Anderson Act being used to increase accountability, we believe that this is a necessary and appropriate goal of Price-Anderson reform. As our written testimony from June 25 discusses on pages 5-7, we are not convinced that the existing incentives and the efforts of federal regulators are sufficient to assure the safest possible operation of nuclear plants. The recent events at the Davis-Besse plant underscore this point. (See Attachment #3 of our statement for a more complete description of the series of events.)

QUESTION 2.

Your group seems to feel very skeptical about Congress' ability to act responsibly in the event that additional funds are required to compensate victims of a nuclear accident. While I tend to agree that the present language in Price-Anderson is somewhat vague ("In the event of a nuclear incident involving damages in excess of that amount of aggregate liability, the Congress will thoroughly review the particular incident and will take whatever action is deemed necessary and appropriate to protect the public from the consequences of a disaster of such magnitude"), I really can't see the same problem in the proposal in S. 1225, where not only is the threshold for Congressional action much higher ($2B), meaning that the accident is that much more severe, but also the schedule and procedures by which Congress must act are so prescriptive, that I truly can not imagine Congress being able to turn their backs on the problem. Would you care to comment on this?

ANSWER

We agree that it is difficult to imagine Congress literally "turning its back" after a several billion dollar nuclear accident. Our skepticism about Congress' ability to provide full compensation, even under the expedited procedures required under S.1225, lies in the fundamental flaw of S.1225--postponement of the decision of who should pay.

The fundamental question of Price-Anderson is "who should pay for an accident?"; this is the most difficult decision Congress faces. If a compensation scheme is going to be perceived as "equitable" and therefore politically viable, the question of where additional funds will come from must be decided in advance of an accident. If Congress is incapable of resolving this question now, two years before final action is required, it is difficult to imagine how Congress will be able to resolve it within a compressed time period after an accident. Any compensation plan which requires funds from parties who are not directly responsible for the accident (whether it is the nuclear industry, nuclear ratepayers or all taxpayers) will be viewed as "inequitable" by some. The only way such a scheme will be politically viable is if the terms are agreed upon before the event. As we witnessed after the accident at Three Mile Island, any efforts to assign responsibility after-the-fact run a high risk of being stalemated.

While many supporters of S.1225 have indicated that additional funds could or should come from nuclear utilities or other participants in the industry, S.1225 clearly limits the liability of these parties. If it is the intent of this legislation to assess utilities for damages in excess of the limit, then each of the sections of S.1225 which limit liability should be amended to include a provision which specifically states that the public liability of licensees may exceed the limit if Congress so decides.

Unless such an amendment is made, it appears that utilities would have a persuasive argument against any compensation plan which assesses them more. Even if such an amendment were made, the precise terms of any additional assessments would certainly be controversial--and thus subject to strong opposition.

If the authors of S. 1225 do not intend to further assess utilities or other participants in the industry for damages which exceed the limit, the only other source of funds is the Federal Treasury. If the intent behind S. 1225 is to draw on Federal funds to compensate damages beyond $2 billion, then that should be clearly stated in the legislation.

Given the enormous federal deficit, it is difficult to imagine what program would be sacrificed to pay for public compensation after a nuclear accident. As we saw after the Texas City Disaster, despite the best intentions of Congress, public compensation was delayed and inadequate. Furthermore, it is difficult to imagine that a majority in Congress will beleive that it is appropriate to use Federal funds to to pay for something which the private sector is capable of handling.

QUESTION 3a.

With respect to activities of the Department of Energy, including nuclear waste disposal and the federal lab R&D programs, do you favor strict and unlimited liability for accidents arising from these activities?

ANSWER

Yes.

QUESTION 3b.

In its wisdom, Congress laid out certain statutes that I think bear some relevance to any discussions of Price-Anderson coverage of DOE activities.

One statute is the Federal Tort Claims Act, which permits suits for injuries caused by "neglect or wrongful" acts or omissions of the federal government. Although there is no monetary limitation on the liability of the government under this Act, the law itself creates a number of obstacles to recovery, primarily because Congress, in writing the Act, saw fit to protect the taxpayers money as much as possible from potentially bankrupting suits. Among the many check-valves in this Act are the following:

1) it does not provide for strict liability, thus, the claimant must prove negligence,
2) the ability to bring class action suits is extremely difficult, if not impossible,
3) the government is not held liable in any case where the accident occurred in the course of an approved federal program.

The second statute is the Anti-Deficiency Act, whereby the federal government cannot spend money that the Congress does not first appropriate.

It seems to me that the Price-Anderson Act is a very unique exception to both these statutes, in that (1) it allows for strict liability to apply in certain instances, (2) it provides an efficient mechanism for class action suits, (3) it allows claims to be brought against accidents that are indeed approved federal programs, and (4) it allows the government to provide up to $500 million in payments in advance of appropriations.

So you see that, in creating Price-Anderson, Congress performed a very careful balancing act to create a very unique insurance system that went a step beyond existing laws.

And now, in renewing Price-Anderson, this Congress -- who I would hope will be every bit as responsible and careful as Congress was back in 1957 -- will again have to perform a balancing act within the confines of the Federal Tort Claims Act, the Anti-Deficiency Act, as well as other statutes.

I wonder if you people understand or appreciate, as taxpayers, this delicate balance?

ANSWER

We certainly appreciate the efforts of the Joint Committee on Atomic Energy in 1957 to create a balance. We also hope that this Congress will be able to improve on that balance.

It is important to recognize that of all the hazards and risks that the American public is exposed to, the risk of a nuclear accident is the only one which no member of the public is capable of insuring themselves against. (Even war risk insurance is available to businesses and others in some forms.) This exception, if nothing else, makes it necessary for Congress to take extra steps to assure that the public is fully compensatep for any damages.

If the intent of Price-Anderson renewal is to "assure full compensation for "all" damages caused by "any" nuclear incident (as S.1225 states) it doesn't make any sense to create obstacles for recovery of legitimate claims, or to arbitrarily limit federal liability for government activities. Furthermore, in its wisdom, Congress exempted the Price-Anderson Act from the Anti-Deficiency Act (Section 170(j) of the Atomic Energy Act of 1954, as amended.)

QUESTION 4.

Let's discuss the provisions for compensating the public for accidents at a federal waste repository. In your written statement, you support H.R. 2524 (Sid Morrison's bill) because it identifies the Federal Treasury as the source for additional compensation above that drawn from the Nuclear Waste Fund. I have read H.R. 2524, and I don't see anywhere in the bill where it provides for a guaranteed mechanism by which the government will actually draw these funds from the Federal Treasury. Are you aware of this deficiency?

As I understand the law, the Anti-Deficiency Act prohibits the government from making payments in advance of appropriations. So we are talking about Congressional action to obtain any money over and above what is authorized to be spent in the Price-Anderson statute. But there are no assurances in H.R. 2524 bill that the Congress will ever act, let alone expeditiously. Have you considered this problem in your appraisal of H.R. 2524?

ANSWER

Yes. As you will see in our written statement our support of H.R. 2524 is not without an explanation.

By providing $5 billion from the Nuclear Waste Fund, H.R. 2524 clearly goes further to assure compensation for waste accidents than either S. 1225 or H.R. 51.(Neither S. 445 or H.R.445 address the nuclear waste issue.) By identifying the Federal Treasury as the source of additional funds, it goes further than S. 1225 in removing the post-accident "political obstacles" discussed in our answer to Question 2.

As we discussed in our written testimony on page 8, we believe that H.R. 2524 would more appropriately and efficienty accomplish its purpose if it identified the Nuclear Waste fund as the source of all compensation, without any arbitrary cap.

If Congress decides that compensation should come from the treasury, we do not view the Anti-Deficiency Act as a bar to legislation which would accomplish this purpose. As we indicated in our answer to the previous question, Section 170(j) of the Atomic Energy Act exempts the Price-Anderson from the Anti-Deficiency Act.

PRICE-ANDERSON TABLE

Issue	Position*
Limit on Liability:	
a) NRC licensees	Strict and unlimited.
b) DOE contractors	Federal Government should assume strict and unlimited liability. If a contractor is negligent, DOE should take legal action to recover costs of compensation.
c) DOE waste activities	Full compensation for accidents involving commercial waste should be paid out of the Nuclear Waste Fund. The Federal Government should assume full liability for accidents involving non-commercia waste.
Waiver of Defenses:	
a) ENO criteria	Redefine to include all nuclear "incidents" as defined in the Atomic Energy Act.
b) Statute of Limitations	Five years after the discovery of an injury and the cause of the injury.
Length of Extension:	Ten years.
Precautionary Evacuations:	Should be explicitly covered for all NRC and DOE licensees/contractors.
Acts of Untraceable Theft or Sabotage:	Should be paid by the Federal Government.

*If no position has been established indicate "none."

JOHN J. KEARNEY, Senior Vice President

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July 17, 1985

The Honorable Pete V. Domenici
Chairman
Subcommittee on Energy Research and
Development
Committee on Energy and Natural
Resources
United States Senate
Washington, D. C. 20510

Dear Senator Domenici:

Enclosed are answers to the questions you submitted to Mr. Steve C. Griffith, Jr., Senior Vice President and General Counsel of Duke Power Company, with your letter of July 2, 1985. We apologize for missing your deadline and hope that it has not inconvenienced you.

Sincerely yours,

John J. Kearney

John J. Kearney

JJK:jam
Enclosure

cc: Mr. Steve C. Griffith, Jr.

Responses to Questions Addressed
To
Steve C. Griffith, Jr.
Senior Vice President & General Counsel
Duke Power Company
By
Senator Pete V. Domenici
Chairman
Subcommittee on Energy Research and Development
Committee on Energy and Natural Resources

1. Q. Do you think that the nuclear industry is held sufficiently accountable for its activities? Could you explain how the activities of the NRC, INPO, and other institutions serve to promote and enhance the safety of nuclear power plants?

A. As I discussed in my prepared testimony, the Price-Anderson system is not intended to, and should not be used to, hold the nuclear industry accountable for its activities. The Price-Anderson system is intended to deliver compensation for legitimate claims in the unlikely event of a nuclear accident having substantial off-site consequences. The tort system is merely a vehicle for delivering that compensation. Congress has already provided both civil and criminal penalties in the Atomic Energy Act as well as a comprehensive licensing and regulatory scheme. It is to this complex of provisions that attention should be directed when the question is raised whether a culpable party can escape being punished or made an example of for compromising the public health or safety.

In addition to statutory and regulatory systems which provide safety assurance and incentives, there are ample economic, personal and professional incentives to assure safety on an individual, a corporate, and an industry-wide basis. The nature of nuclear accidents involving substantial releases that might affect the persons or property off-site is that any such accident would almost inevitably involve enormous damage to the facility itself. In addition to direct physical damage, substantial costs would likely be incurred for decontamination and perhaps other measures necessary to contain radioactive material to the site. Further, as Duke Power Company predicted in testimony before the U.S. District Court in 1976, and as the Three Mile Island Unit 2 accident confirms, very substantial additional expenses would be incurred for energy purchases to make up for the loss of the unit in which the accident occurred and shutdown of other similar units on the same site. Depending on the circumstances, similar units on the same utility system and possibly even on other systems might also be shut down.

At an individual level, plant employees and managers generally have homes and families, friends and neighbors near the nuclear unit. The incentive to act carefully and responsibly arising from this factor is probably more powerful than any notion of corporate economic health.

NSSS vendors, architects, engineers, constructors and other suppliers have a very substantial stake in the safe operation of nuclear power plants which they helped design, construct or maintain. Not only would a substantial accident traceable to their activities have a major impact on professional reputations and standing, it would almost certainly affect future sales of goods and services to the utility industry, and could subject suppliers to claims by utilities or others for claims not covered by Price-Anderson, such as loss of on-site property. Although liability for damage to on-site property is normally limited by contractual arrangements between the utility and the vendor or supplier, the extent to which such contractual provisions provide complete protection has not been fully litigated.

Insofar as the activities of the NRC are concerned, the main reason for the NRC's existence is to assure the public health and safety through a comprehensive system of licensing, regulation, inspection and enforcement. Each nuclear utility licensee is held strictly accountable for compliance with applicable regulations by the NRC. The NRC has an extensive inspection and enforcement program to ensure that its regulations are met, and has full authority to take whatever action may be deemed necessary for protection of the public health and safety, including orders for plant shutdown or license revocation.

The Institute of Nuclear Power Operations sets standards of excellence above and beyond the minimum essential requirements contained in the NRC's regulations, and all INPO members are expected to be, and have been, responsive to INPO's guidance. Special procedures are in place to provide INPO with guidance in the event that a utility member is not responsive, which ultimately could result in a decision to suspend the utility from INPO membership. This undoubtedly would have major impact on the utility's standing with the NRC, with its peers, with its insurers, and in the financial markets.

In addition, nuclear utilities are subject to inspections directly by their insurers. These inspections cover areas such as pressure vessels, fire protection, and various plant machinery. Both property and liability coverage may be suspended if conditions are unsatisfactory.

2. Q. It was largely due to the efforts of the nuclear utilities that we were able to phase out government indemnity of nuclear utilities, by replacing this indemnity with the pooled "retrospective-premium" system that was added to Price-Anderson in 1975. Now, this was a significant change to the Price-Anderson scheme, and it represents a willingness on the part of utilities to contribute substantial amounts of money to pay for claims arising from an accident for which they had no direct responsibility.

Now there is a point at which this willingness to share responsibility for someone else's misfortune might break down. Where do you think this breaking point might occur? Is there some point at which Duke Power would say "enough is enough"?

A. As has been mentioned in testimony before this and other Congressional committees, there is a point at which it is unreasonable to expect licensees to act as insurers without compensation and without limit for other licensees. There is no formula that we know of that would yield a satisfactory answer under all circumstances for all utilities (which have diverse forms of ownership and financial structures ranging from federal agencies to large and small investor owned utilities, to state and municipal utilities and rural electric cooperatives) .

It is our belief that most utilities could meet an assessment roughly double that under present law, but that few utilities (excepting, that is, the very large ones with the fewest nuclear units) could or should be expected to meet assessments at a level as large as three times or more the present assessment. Utilities depend on credit, and in a post-accident economic environment, nuclear utilities may have grave difficulty obtaining credit. In the interest of providing a specific answer to a specific question, we believe that $10 million per nuclear incident per licensed reactor is about the most that can be fairly expected of licensees in no way responsible for an accident.

3a. Q. What would be the effect of imposing strict, unlimited liability on nuclear plants, especially as to the impact this would have on the investment community, the insurance market, the stockholders, and the consumers?

A. It is our understanding, confirmed by correspondence addressed to the House Interior Committee, that the investment community would not react favorably to repeal of limitation on liability or the imposition of unlimited retrospective premium assessments on nuclear plant owners, and that in all likelihood either measure would increase the cost of capital to a utility. Since the cost of capital is typically one of the largest, if not the largest, cost to an electric utility it would increase the cost of service and the required return on equity, thereby increasing the price of electricity to consumers. This would occur because of the perception of financial risk to investors and hence an additional reward would be demanded, even though it is extremely unlikely that such cost would ever be incurred because the possibility of an accident with major off-site consequences remains extremely small.

Because changing the present system to provide either unlimited liability or unlimited assessments would destroy economic channeling of liability costs, either measure could be expected to lower the nuclear liability policy limits available to any one named insured. This is because vendors, service organizations, and other suppliers would demand separate coverage for their own exposure while the insurers would seek to limit their risk at any one nuclear site to present levels, which means that the sum of the policy limits in each of those separate policies would not exceed the present "omnibus" policy, but not all insureds would necessarily be liable.

3b. Q. What would an unlimited liability scheme such as the NRC's 1983 concept do to the pooling concept? Would utilities still be willing to contribute on an annual basis for an unlimited number of years to pay for someone else's accident?

A. Much of what has been said in response to Question 3a. is equally applicable to the 1983 NRC proposal. In answer to the specific question in the second sentence, we believe that it is fair to say that utilities would not be willing to make retrospective premium payments for an unlimited number of years even if the annual installment were limited to the present $5 million, much less the proposed $10 million.

4. Q. If this Congress were to pass S. 1225 as it now stands, what effect would a $15 million retrospective premium have on a typical utility in terms of (a) the average rate increase to customers, or alternatively, (b) the average earnings on common stock?

A. It has been our experience that one should view with caution analyses which proceed by breaking very large numbers down into seemingly modest numbers by finding some large divisor (e.g. numbers of customers or shareholders) to apply to those numbers. The fact that the change in a typical customers' monthly bill may appear small does not change the fact that the dollar figure of the assessment we started with is very large compared to cash on hand, and credit may be unavailable. In the case of Duke Power Company, for example (and its co-owners in the case of the Catawba units), the total retrospective premium assessments under the second tier of S. 1225 would amount to $105 million in a single year, even before the additional impact of the third tier. That is simply too large a burden to place on a single company and its customers and/or shareholders for someone else's accident.

The impact of a $15 million retrospective premium would vary depending on the size of the company, the number of nuclear units operated by the company and the relationship of the number of these nuclear units to the size of the company. Based on these variables, a $15 million retrospective premium could represent anywhere from 1 to 3% of a company's rates and perhaps 9 to 14% of earnings on common stock.

5. Q. Some people believe that the current limitation on liability in Price-Anderson is a disincentive to safety. Do you agree?

A. Limitation on liability is no more a disincentive to safety than liability insurance itself or the corporate form of doing business. If limitation on liability were a disincentive to safety, then all corporations (which have limited liability by virtue of being such) would have such disincentive. So also would medical doctors and hospitals which have limitations on liability in many jurisdictions and the many governmental and not-for-profit institutions that have governmental or charitable immunities from tort liability. So also would any employer with respect to his labor force inasmuch as workers compensation claims are limited to a schedule of benefits. So also, finally,though there are many other examples, would shipowners whose liability is limited to the post-accident value of the vessel and pending freight. The argument about limitation on liability and safety incentives is essentially the same pre-Victorian argument that was made against liability insurance but has long been rejected by legislatures and courts.

As we mentioned in response to the first question, the proper places to look for incentives to safety are in the personal, professional, and economic self interest of the owner and supplier organizations and their employees, in industry self-policing activities and, lastly but not least, in licensing, regulation, inspections, and enforcement programs of governmental authorities, including the possibility of civil or criminal sanctions for serious violations. As we stated in response to question 1, Price-Anderson is intended to deliver compensation, not to punish putative wrongdoers. To attempt to use it to do both is likely to lead to compromising the compensation objective, placing unfair burdens on the innocent (both industry and public) and providing a legacy for generations of lawyers.

6. Q. Under the present law and current insurance policies, how are the costs of investigation and settlement of claims covered? Should such coverage be excluded from within the liability limit, so as to maximize the funds available to compensate for injuries.

A. Under the present statutory provisions governing primary and secondary financial protection, and under the respective policies of insurance implementing those provisions, the cost of investigating and settling or defending claims is counted toward policy limits. Historically, many liability policies obliged the insurer to defend a single named insured in addition to reimbursing the insured for judgments or settlements up to a stated policy limit. But that is a very different matter from a policy written on an "omnibus" basis, under which the insurers could be required to defend hundreds of defendants in as many separate courts. Moreover, we are advised that the trend in liability insurance is to include such costs in policy limits as has always been done with nuclear liability insurance. There is no more reason to "maximize the funds available to compensate for injuries" by excluding defense costs than there is to achieve the same objective by limiting contingent fees on the part of plaintiffs' counsel. If such a measure were enacted, it would simply lead to a reduction in primary insurance and possibly to a gap between financial protection and statutory requirements since it does not appear that unlimited liability for defense costs could be imposed either unilaterally on the insurers or other licensees. It would be unjust to leave a licensee with responsibility for paying the costs of investigating and settling or defending claims against all other defendants on an omnibus basis in an unlimited amount. It would be unfair also to impose such a substantial expense retroactively on non-licensees who might be named as defendants. Under present or prior law, such parties have had no reason to include such risks in their pricing or set up reserves for dealing with them.

Q. Would the costs of precautionary evacuations be covered under current nuclear insurance policies?

A. It is our understanding that the nuclear insurers take the view that precautionary evacuations would be covered under current forms of primary and secondary nuclear liability insurance assuming that such evacuation was ordered by duly constituted authority. To the extent that there is legal liability for expenses legitimately incurred as a result of such governmental order, we would concur with that view. We are not sure that we completely understand the basis for the doubts expressed by the NRC regarding such coverage under the statute insofar as it pertains to indemnity agreements where such agreements many still play a role. Since a nuclear incident requires only

> "an occurrence . . . causing . . . loss of or damage to property, or loss of use of property arising out of . . . the radioactive . . . or other hazardous properties of . . . special nuclear or byproduct material . . . "

and not necessarily a release of such material from its intended place of confinement, we would think that the statute was intended to, and does cover such legal liability as there may be under applicable law for claims for legitimate expenses incurred in a duly initiated precautionary evacuation.

In short, it would appear that there can be "public liability" for a " nuclear incident" even though the anticipated release of radioactive materials in excess of license or regulatory limits never occurs.

8. Q. In Commissioner Bernthal's testimony, he addressed the issue of punitive damages. In his opinion, if punitive damages were allowed to be paid with Price-Anderson insurance funds, this would remove the deterrent value of such damages, because the insurance pools, and not the utility at fault, would be responsible for the payments. Do you agree with Commissioner Bernthal that punitive damages should not be insurable under the Price-Anderson Act?

A. While we believe that Commissioner Bernthal is correct in his underlying concern regarding punitive damages, as indicated in response to Question 9 below, we strongly disagree with the notion that punitive damages should be excluded from Price-Anderson coverage. As long as punitive damages can be awarded in the unbridled discretion of juries applying their own notions of the degree of care required in dealing with nuclear facilities and materials, regardless of compliance with NRC regulations or indeed applicable radiation standards, there is no assurance that such damages would not be imposed on persons who have neither done any wrong nor breached any recognized duty.

There is no basis to conclude that juries must be appropriately instructed in the awarding of punitive damages arising out of even closely-regulated activities, and specifically that they would be instructed that they could not assess punitive damages merely because of ownership or operation of a nuclear facility duly licensed by the NRC and operated in full compliance with all applicable requirements. It must also be remembered that while the imposition of punitive damages on non-culpable parties is a distinct possibility under present law, no insurance other than nuclear liability insurance under Price-Anderson is available against such exposure. Moreover, no less an authority than a Supreme Court Justice has pointed out that in some jurisdictions, the line between punitive and compensatory damages is less clear than in others, for example, where "punitive" damages are allowed for elements of damage not recognized as compensatory under state law. In those instances, delivering the compensation may require insurance without exclusion, otherwise recovery could not be had from insolvent defendants.

As noted in response to Question 1 above, punishment of culpable licensees and other parties can and should be achieved under the civil and criminal enforcement provisions of the Atomic Energy Act.

9. Q. Commissioner Bernthal also commented on the Silkwood decision, in which the Supreme Court held that a state may award punitive damages against an entity regulated by NRC for actions the jury finds negligent, even though no NRC regulations were violated. In Commissioner Bernthal's opinion, this decision sets a bad precedent, because it in effect allows "every jury in America . . . (to) theoretically serve as its own Nuclear Regulatory Commission."

Do you agree with Commissioner Bernthal's opinion? Do you feel that Congress should amend the Atomic Energy Act to reaffirm its principle that a licensee fully in compliance with NRC regulations should not be held liable for punitive damages?

A. Commissioner Bernthal is in general quite correct in his concern for federal preemptions following Silkwood. The effect of the Silkwood decision is to open a vast breach in the practical effect of federal preemption over the radiological health and safety regulation of nuclear facilities. We would agree with the thrust of Commission Bernthal's recommendation that the effect of the Silkwood decision should be countered by making clear that the federal government has preempted (via the licensing, regulatory, inspection, and civil and criminal enforcement provisions of the Atomic Energy Act and the activities of the NRC carrying out those provisions) the function sometimes otherwise served through punitive damages. This preemption question is not, however, one that primarily involves Price-Anderson and need not be resolved on the same schedule.

10. Q. If waiver of defenses were applied to all nuclear incidents, would this provide an additional strict liability remedy to on-site workers, who already have a strict liability remedy in workers' compensation? Is it wise to provide a strict liability remedy for radiation releases that may in fact be within radiation limits established by the NRC?

A. As I indicated in my prepared testimony, waiver of defenses for any nuclear incident (not for extraordinary nuclear occurrences only under present law) would provide an additional strict liability claim to on-site workers who already have such a remedy under workers compensation. They could simply name any plausible defendant other than their employer who would then be required to waive defenses -- even though under otherwise applicable law, strict liability would not be appropriate. For example, there might have been no release of material from its intended place of confinement and no violation of regulatory requirements. The defendant may not have been required to foresee the particular risk to persons like the claimant, or the claimant might have assumed the risk or been contributorily negligent.

Moreoever, it seems wholly unwise to invite a flood of claims from persons near or distant from a facility by requiring waiver of defenses to allegations based on outlandish claims or misapprehensions as to the effects of normal operating releases. Since, as partially explained above in response to Question 7, a nuclear incident need not involve a release in excess of normal operating limits, removing any threshold for the invocation of the waivers of defenses would result in the expenditure of resources (that should be reserved for legitimate claims) on frivolous ones which would, however, be made more difficult to defend.

July 23, 1985

Responses of M.G. Johnson,
Chairman of the Coordinating Committee of the Price-Anderson Contractors Policy Issues Study

1. There would be strong reluctance on the part of contractors to perform nuclear research and other nuclear activities for the Federal Government if Price-Anderson were not renewed. As indicated in my prepared statement, the strong reluctance would apply especially to suppliers whose nuclear activities are only a small percentage of their overall businesses. This would lessen competition and otherwise increase costs to the government. Furthermore, large companies with greater assets probably would shy away from DoE contractors, leaving them to smaller companies with fewer assets and probably less experience and expertise. This very well could lead DoE to the situation now occurring with respect to hazardous waste cleanup under Superfund where qualified cleanup contractors that cannot obtain insurance are unwilling to risk the assets of their companies to unknown liability. Similar problems would be presented if DoE's authority to enter into nuclear hazards indemnity agreements under the Price-Anderson Act is not renewed.

2. DoE contractors should not be required to purchase insurance from the private nuclear pools. DoE and its predecessor agencies have correctly concluded that such a requirement should not be imposed for several reasons: The costs of insurance simply would be passed on to the Government, which is in a position to continue to self-insure nuclear risks, especially in light of the fact that very little Federal money has been paid out in the almost thirty years since the Price-Anderson Act was passed. Additionally, the nuclear insurance pools in the past have taken the position that they will not issue policies for DoE contractor activities, especially those involving classified or even unclassified defense programs.

3. DoE contractors have a number of incentives to act safely. Price-Anderson indemnity covers only nuclear liability. Contractors still are exposed to conventional, nonnuclear liability for which they may or may not have insurance coverage and which was a history of much greater damage awards in the past than nuclear claims. Poor contractor performance could lead to debarment from future DoE contracts, and could be damaging to their reputations. Additionally, DoE exerts close supervision over its contractors to ensure that the public health and safety are protected.

4. DoE indemnification should be made mandatory to ensure that the public is fully protected in the case of nuclear incidents. At the present time, DoE must make an administrative determination that a particular activity presents a potential risk of a "substantial" nuclear incident (which the Department's regulations provide is one where damages could exceed $60 million). Since the Department in the past has been reluctant to make such a determination presumably for public relations reasons, coverage sometimes has been denied or has required extended negotiations. An example of this is DoE's initial refusal to extend Price-Anderson indemnity to contractors involved with the Waste Isolation Pilot Plant (WIPP) in New Mexico.

5. We do not agree with Commissioner Bernthal's testimony on coverage for punitive damages, Price-Anderson also should continue to cover any legal liability. The current trend is to allow insurance for all damages, including punitive damages. Additionally, it simply is impossible to draw a line between what activities should be insurable and what should not be with the current volatility of American tort law. Furthermore, as stated above, contractors have a number of incentives to behave safely without being threatened with punitive damages.

6. We do agree with Commissioner Bernthal's statement that the Silkwood decision should be overruled by Congress. NRC licensees - and also DoE contractors - that comply with applicable Federal regulations should not be subjected to punitive damages. Juries of laymen should not be allowed to impose their own nuclear safety regulations.

7. The waiver of defenses provision should not be applied to all nuclear incidents. Congress considered that option in 1966, and correctly determined it only would lead to nuisance suits. On-site workers already are covered by worker's compensation furnished by their employers. They should not be able to invoke Federal law to require other entities to waive defenses that may or may not be available under a particular State's tort laws. Each State should continue to be able to set its own tort standards, except in the case of a major accident (i.e., what the Price-Anderson Act now refers to as an "extraordinary nuclear occurrence").

Questions for DOE-Contractors (M.G. Johnson)

1. Would contractors continue to perform nuclear research for the federal government if Price-Anderson were not renewed?

   Let us assume that Price-Anderson were allowed to expire and that various companies were considering contracting with DOE even without Price-Anderson. Knowing that they would be exposing themselves to limitless liability, isn't it likely that the strongest companies; and therefore, the ones with the most assets to lose, would shy away, from DOE contracts, and that the smaller, and most likely less experienced, less qualified companies -- but with less assets to lose -- would step in to fill the gap? Couldn't we then find ourselves in a situation at DOE very similar to what we are now seeing happening with hazardous waste cleanup under Superfund? That is, the qualified companies will not risk their company's assets to the unknown liability associated with these cleanup activities, and so we find ourselves in a situation where the only companies foolish enough to go for the Superfund contracts are those that have very little to lose anyway (some people call these kind of operations "fly-by-night"). Could this conceivably happen with DOE contracts if we didn't indemnify the contractors against liability?

2. Should DOE contractors be required to purchase insurance from the private nuclear pools? Why or why not?

3. Do contractors have any incentive to operate safely and to perform under high standards of excellence?

4. Why do you feel that DOE indemnification should be made mandatory? Is there any instance where DOE has not indemnified its contractor for nuclear-related work?

5. In Commissioner Bernthal's testimony, he addressed the issue of punitive damages. In his opinion, if punitive damanges were allowed to be paid with Price-Anderson insurance funds, this would remove the deterrent value of such damages, because the insurance pools, and not the utility at fault, would be responsible for the payments. Do you agree with Commissioner Bernthal that punitive damages should not be insurable under the Price-Anderson Act?

6. Commissioner Bernthal also commented on the Silkwood decision, in which the Supreme Court held that a state may award punitive damages against an entity regulated by NRC for actions the jury finds negligent, even though no NRC regulations were violated. In Commissioner Bernthal's opinion, this decision sets a bad precident, because it in effect allows "every jury in America... (to) theoretically serve as its own Nuclear Regulatory Commission."

   Do you agree with Commissioner's Bernthal's opinion? Do you feel that Congress should amend the Atomic Energy Act to reaffirm its principle that a licensee fully in compliance with NRC regulations should not be held liable for punitive damages?

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